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COMMENTS ON SOME OF THE LESIONS OF THE FEMALE PELVIC VISCERA, CARCINOMA, INFLAMMATIONS AND DISPLACEMENTS.*

JOSEPH C. TAYLOR, M.D.,
Professor of Gynecology at the New York Polyclinic Medical School and Hospital; Associate Surgeon at the Woman's Hospital; Surgeon to St. Elizabeth's Hospital,
NEW YORK CITY.

In dealing with inflammation of the portio vaginalis by far the most frequent one met with is gonorrhea. Efforts have been made, by the employment of different antiseptics, to confine this inflammation to the vaginal portion. As yet, none has been discovered which will guarantee that the viscera higher up will not become infected. However, when meeting with this inflammation one should exercise every precaution, and by methods of treatment, endeavor to prevent its spread beyond the internal os. In my experience the one drug which seems to be most efficacious is the tincture of iodine. The parts which are mainly affected are the glands of Skene and the compound racemose glands of the cervix. So far as the vaginal glands are concerned, they are not very well developed. The use of iodine to the glands around the meatus urinarius is sometimes objected to by patients, and when this is the case, any of the silver salts, and especially argyrol, are generally used in this locality. The glands are not very deeply situated, and one usually gets a quick response here from the use of one of the silver salts. Personally I prefer argyrol. It is in the compound racemose glands of the cervix that gonococci seem to become deep seated and the most difficult to eradicate. It is the nature of the germ, both in the male and female, to find its permanent lodgment in deep recesses of the compound racemose glands.

In many cases it seems almost impossible to cure gonorrheal folliculitis of the cervix, the reason being that the germs become deeply seated in the roots of these glands and any medication directed toward them never reaches them. Moreover, though the gonococcus is difficult to grow in the laboratory it seems to proliferate and strive in the structure of these glands for months and even years. As for douching, so far as these glands are concerned, the ordinary antiseptic douche does nothing but cleanse the cervix, which, of course, is important in a way, but one must combat, and vigorously, too, the infection in the glands of the cervix, and, as I have previously stated, iodine in my hands has been the most reliable agent. The method of employing it is quite important, as frequently men in their zeal to cure the disease high up in the cervical canal, carry it into the endometrium through the internal os. And it is my firm belief that if the gonococcus crosses that barrier, the internal os, it will not stop until it has traveled the length of the fallopian tube at least. The secretion of the cervical glands is in itself a mild antiseptic, moreover, the secretion which disease excites seems to form a barrier to an onward invasion of any infective agent.

I have tried the application of various silver salts to the cervix in different clinics, but in my hands, with less success than with the iodine. As to the method of applying it: the cervix should be well exposed, and by means of an applicator wound with cotton, the os part way up into the canal should be well saturated with iodine. Some follow this with an insertion of a glycerine tampon, which, I think, adds but little to the treatment, as the disinfecting agent is the iodine. Others, in addition to the iodine, pack a little iodoform gauze around the cervix and allow it to remain forty-eight hours, when it is removed, and the same treatment repeated. The application of iodine should be repeated at least every forty-eight hours, in some cases which develop chronic gonorrheal endo-cervicitis no treatment seems to cure them. In such cases the amputation of the cervix is the only method to be employed.

I will purposely pass over many of the other infections such as tubercular, syphilitic, and others of the cervix which are rare, and pause for a moment to enter the field of gonorrheal inflammations of the tubes. If symptoms of extension of gonorrhea from the cervix into the tubes are carefully noted, and they are marked mainly by pain

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on both sides of the pelvis, sometimes so severe as to cause the patient to lean forward and press her hands to her sides, some rise of temperature, which marks the early invasion of the tubes. In these early cases the cul-de-sac is incised, the tubes opened and drained, the exposure of the infected areas together with the presence of iodoform will limit the invasion in a large percentage of cases. Of course, I do not maintain that in so doing the tube will remain patulous, but as the patient will be spared the discomfort of going through a self-limited infection, and possibly, though her organs are damaged, she may go through life retaining them without any marked discomfort. This will be accomplished in only about fifty per cent. of the cases, but even so it is well worth trying, as there is practically no danger in the operation.

Puerperal Infections.—Space will not permit me to enter into the subject; it is too broad, and one not to be treated by any of the palliative measures.

We sometimes meet the so-called cervical cystic degenerations. Various methods of treatment have been found, as puncturing with a small knife, application of various preparations, but in my experience the only method of establishing a cure is amputation of the cervix. I refer to such cases as are uncomplicated by lacerations or infections.

Employment of tampons probably is as old as gynecology and no doubt has done and is doing an unlimited amount of good, and about the only possible harm that could come from their use would be that their employment is usually so prolonged that the real surgical conditions would progress so gradually that cure could not be effected.

Boro-glyceride and glycerine tampons, ichthyol and many other combinations have been employed for all sorts of conditions. In the chronic pelvic inflammations, ichthyol tampons shoved up into the vault of the vagina certainly bring about relief of symptoms. Ichthyol seems to have more or less of an antiseptic or analgesic effect, so much so that patients swear by them. I do not think that any of these drugs when inserted in the vagina have any effect upon the intra-abdominal pelvic viscera, and perhaps a good deal of the relief obtained is produced by the outward pressure brought about by their presence. They are generally employed in all clinics as well as office practice. And frequent in post operative cases where a portion of the pelvic organs have been removed, the employment of ichthyol tampons brings about relief from unpleasant sequelae following operation. As, for instance, the removal of both tubes and one ovary; this will leave the other ovary with an unusual blood supply and frequently congestion follows. Ichthyol tampons seem to have a very good effect mentally as well as directly upon such ovary. No doubt the congestion of the ovary would subside if left to itself, but the patient has the satisfaction of knowing that something is being done for her relief. As for the effect of glycerine and ichthyol on acute infective endocervicitis, I doubt their being of very much service, but in chronic conditions of both cervix and tube and ovary, relief at least may be obtained.

Though I am departing a little from the subject of this paper, I cannot refrain from mentioning some points in the early diagnosis of cancer of the cervix. Text-books as a rule give symptoms as bleeding, presence of a cauliflower growth, later emaciation and cachexia. When we stop to consider that in this, a medical center, only five per cent. of the cases of cancer of the cervix are recognized early enough that a major operation is warranted, I am quite sure you will pardon me for taking up your time in bringing out a few points relative to the early diagnosis of cancer of the cervix.

The earliest sign of beginning carcinoma is a fine watery discharge not confined to the menstruation, but more or less constant; enough so that an intelligent woman will consult her family physician relative to it, but too often members of the medical profession regard this too lightly, prescribe an antiseptic douche, assure the patient she is all right, more often than not without physical examination. The cause of this watery discharge is the molecular activity which is going on in the cells around the cervical glands which causes them to secrete an abnormal amount. On physical examination, if one is careful, the early appearance of cancer of the cervix can be easily noted. If it is not recognized until the cauliflower growth is developed in the patient, during the menstrual period of life, the percentage of recurrence after major operation will be alarmingly great.

The best description that I am able to give of it is perhaps in the beginning the cancerous area resembles a spot on the moon, or, to be more definite, there will be a well defined area where the glistening appearance of the cervix disappears within a circumscribed area as plainly as the line of erysipelas, and if it is detected at this stage one can hope for a recovery without recurrence by employing a major operation.

Another test is to insert in this area a sharp tenaculum, and with gentle traction, if the tenaculum pulls out, this is almost sure to be cancerous tissue. In large cities we have at our disposal, and we should employ him, the microscopist. But one thing that I wish to impress upon you is that if a section is to be cut from the cervix, a thorough understanding should be had with the patient, that if this section proves to be cancerous the patient will submit to an operation within three days. The reason being that incision into a cancerous area causes the disease to spread with much greater rapidity, hence we should never incise without some agreement with the patient as to the operation which is to follow if the area should prove to be cancerous.

Displacements. The most common malposition in the young girl is acute anteflexion; oftentimes the subject is not brought to the doctor's attention until the patient has been suffering from dysmenorrhea for years. Pessaries have been employed with little or no effect. The usual symptoms are excessive pain, often confining the patient to bed before menstrual flow is established. Various operative procedures have been employed, Alexander's operation has often been done, pessaries inserted, cervix amputated, and numerous others. I firmly believe that local treatment, tamponage, painting the cervix, etc., has no effect whatever. In employing stem pessaries we must recognize the fact that we have a foreign agent which is bound to be more or less irritating; inserted after a curettage more or less risk is taken in producing an inflammation. I have seen cases of very severe infections following the insertion of so-called stem pessaries. Personally I never employ them. What has proved to be most effective in my hands is thorough dilatation of the internal os and to lateral incisions curring out into the muscular fibres and then separation by divulsion, keeping them separated on the same principle as in cutting the sphincter muscle. The results will be good especially in the married woman, for pregnancy usually follows, which is the real cure of the condition.

Retro-Displacements. These can be divided into those due to pelvic infections and those which are due to laxity of the pelvic tissues, lacerations, etc. The employment of the pessary in the first named often does more harm than good, and surely it will do no good. In the second class of cases the uterus can be kept up by the wearing of a pessary, if the patient desires or prefers it to an operation which will correct the condition. Tampons often relieve both conditions, especially those of the first type, and the drug used on tampon will produce more or less local anesthesia.

Of operative measures there are many, space will not allow me to discuss the various ones. Some employed are, to my mind, not surgical. Ventral fixation, an operation which makes an abdominal organ out of a pelvic one, with the pulling of the utero-vesical and utero-sacral ligaments at one end and fixing the uterus at the other to the abdominal wall, and putting it on the stretch so that the organ is being practically pulled to pieces at both ends and starved of its blood supply is bound to produce unpleasant sequelae. At one time this operation was very much in vogue, but the men who advocated it then are denouncing it to-day, having had unpleasant experiences following their operations. Various operations on the round ligaments were then devised. Alexander's operation, which is seldom employed to-day, and has not proven of very much service for the reason that the distal portion of the ligament which is used in this procedure is devoid of all elasticity, as there is no muscular fibre in the round ligaments after entrance into the abdominal ring.

Of all operations on the round ligament the intra-abdominal only seems to be most rational and has proved to be the best, whether done from the vagina or through an abdominal incision. Shortening the ligament on itself after exposing the tissue beneath the peritoneal layer, in my hands has proved very satisfactory, so much so that operations which carry the ligament out through or across muscles of the abdominal wall, such as Gilliam's, are not nearly so surgical, for the amount of trauma inflicted is by far greater than that of folding the ligament on itself and hitching it to the anterior uterine wall.

Prolapse of the Uterus. Prolapse of the uterus in women beyond the menopause can be treated in one of two ways, either by their wearing the so-called vaginal pessary which is strapped to the body in such a manner as to hold the uterus and vaginal walls in place. This is frequently employed with patients in whom their general physical condition, due to their kidneys, heart, etc., precludes operation. But in those on whom operation is possible, that procedure is by far the wiser. The sacrifice of organs that have performed their function means little to most women. Personally I prefer removal of the uterus and stitching the base of the broad ligament into the walls of the vagina in such a manner as to have them serve as tractors to keep the vault in its proper position.

doing any plastic work on the anterior or posterior wall which is deemed necessary. Some men prefer to dissect the bladder free and to pull the fundus of the uterus down under it and hitch it to the anterior vaginal wall. The only argument against this is that we have an organ brought into closer contact with the neck of the bladder and may irritate it. Likewise the weight of the organ itself is bound to have a tendency to descend into the vagina.

It is in the women in their early thirties with a first or second degree prolapse that the operator must hesitate on a procedure—we must not remove organs otherwise healthy. At the same time we recognize that not all measures to cure malpositions are successful, such as plastic operations on the cervix and the vaginal walls and the correction of the position of the uterus either by round ligament operations or even a suspension, the reason being that in the descent of the uterus into the vaginal outlet the walls of the vagina are more or less folded upon themselves, with a result of a loss of the surface of the vaginal wall causing shortening, as when skin is folded upon itself a certain portion of it will disappear. This shortening is bound to exert a downward traction upon whatever work is done upon the round ligaments above, which is a frequent cause of failure in these operations. In short, operations for prolapse are very satisfactory in women after the menopause, but too often we are disappointed in our results in the patient in the thirties.

117 WEST SEVENTY-NINTH STREET.

SALINE INFUSION.

Saline infusions should be used with great care and the amount to be infused is to be determined by the effect upon the blood pressure and the heart. In some cases one or two pints of saline when infused into a vein is sufficient to raise the blood pressure and more than this may produce harmful effects; when larger quantities than four or five pints are required to restore the blood pressure the prognosis is not favorable. The infusion should be given slowly to avoid the danger of dilating the heart and causing edema of the internal organs. It should not be given faster than one liter in twenty minutes, or one-half an hour. It is contraindicated when there is distension of the right heart and venous stasis without a previous venesection. In such a case an equivalent amount of saline solution should be infused as compared with the amount of blood removed.—CONRAD GEORG in *The Physician and Surgeon.*

SPONGE COMPRESSION IN THE TREATMENT OF MAMMARY ABSCESS.

JOHN EDWARD DEARDEN, M. D.,
NEW YORK CITY.

In the days now happily passed when woman in her maternity was considered to have passed through the valley of the shadow of death, when puerperal fever, etc., were considered to be natural concomitants of her condition, when physicians were spoken of as lucky or unlucky in their obstetrical cases, even then, when she arose unscathed from her lying in bed, she frequently had to suffer the painful, mutilating and long drawn-out complication of acute mammary abscess, which was attributed to an accumulation of milk in the gland.

The influence which the milk was believed to exert over the puerperal condition was shown in the terms milk-leg, applied to iliac phlebitis, mania-lactea to puerperal insanity, and milk fever to puerperal septicemia.

The havoc wrought by the mammary abscess of former times is now rarely seen, for with our knowledge of the cause of this complication came better methods of treatment. But even to-day the results obtained under ordinary methods are for from satisfactory.

Three forms of abscess are generally spoken of: Subcutaneous, submammary and parenchymatous. The subcutaneous abscess is an inflammation of the cellular tissue covering the gland, and it is due to suppuration of the sebaceous glands in that locality, and it can be treated in much the same manner as we treat furuncle in other parts of the body.

The submammary abscess is a very rare condition and probably does not occur except in connection with caries of rib or empyema. It is an inflammation of the pad of connective tissue lying between the mammary gland and the pectoral muscle. When abscess forms there is but little redness of the breast, but the breast is raised from the thorax, and there is considerable fluctuation from the large amount of pus present. The treatment is by incision beneath the breast and drainage; spontaneous opening leaves a sinus.

The third, or parenchymatous, variety of mammary abscess is the subject proper of this paper. A study of acute mammary abscess shows its close relation to lactation; 672 out of 813 published cases being due directly to lactation. It is caused by a microörganism (the staphylococcus aureus) which gains entrance to the gland by way of the

milk ducts and not through the lymphatics in the area of the nipple, since the latter are superficial and empty directly into the axillary glands. The vascularity of the gland during lactation and the presence of an animal fluid make an ideal field for germ development; also the branching character of the abscess along the milk ducts must influence one in favor of the theory of an infection by way of the milk ducts. Experimenters have produced mammary abscess in lactating goats by injecting tuberculous virus directly into the milk ducts, thus proving that infection can and probably does take place this way.

In mastitis complicating lactation the infection may take place at any time. One-half the cases occur during the first month and a majority of these during the first week. Cases are reported as late as the fourteenth month.

As infection is almost always from the nipple, attention should be directed to the nipples some time before parturition. Small or depressed nipples should be drawn out and gently manipulated daily with lanolin or cocoa butter, which accustoms them to mechanical irritation, when the period of lactation arrives. The nipples are to be washed before and after nursing with a two or three per cent. solution of boracic acid. We recognize the importance of this when we consider the moisture and colostrum about the nipple and the proximity to the warm moist axilla—good conditions for the development of the organisms always to be found in the mouth of a child. If erosions or fissures appear the nipple must be protected by a shield during nursing and covered with a pad of moist boracic and gauze between feedings. Each day the nipples are to be carefully dried and the fissures touched with a finely pointed stick of silver nitrate and painted with compound tincture of benzoin. If notwithstanding our careful prophylactic treatment infection of the gland should occur, it is ushered in with symptoms so well known that it would be idle for me to dwell upon them here. If our patient be seen sufficiently early, prompt attention may avert a catastrophe. Nursing from the inflamed breast is to be stopped absolutely; tension being relieved by means of the breast pump. The breast to be supported by a sling and comfortable binder, and the arm is bound to the affected side. An ice bag is placed over the seat of inflammation, to remain until all signs of inflammation disappear, or until we are satisfied that pus is present.

As soon as mastitis and fluctuation are evident the abscess should be opened and treated in the following manner, known as Mundé's sponge compress method. A large, flat, coarse bathing sponge is hollowed to admit the mamma, it is freed from foreign matter and treated to a hot carbolic acid bath. The abscess is opened over the seat of fluctuation by an incision radiating from the nipple, the pus is evacuated and the abscess cavity is washed out with a mild antiseptic solution or saline solution. The sponge is dipped in sterile or carbolized water, as hot as the hand can bear, and wrung out in a towel. It is now placed over the breast, the walls of the cavity being held in apposition, is covered with oiled silk and is evenly and firmly compressed against the thorax with wide rubber bandages. This dressing is changed daily, the sponge being cleaned, but the abscess cavity is not interfered with.

This treatment is based on the ease with which the mamma can be compressed against the flat unyielding surface of the thorax, and by means of steady, uniform and gentle pressure, the abscess cavity can be kept free from pus and serous accumulations, and the walls of the cavity held in apposition, inducing fresh granulations to unite and thus close the cavity. It is indispensable that there should be uniform, even compression of the breast from the periphery towards the center and from the surface towards the thoracic wall.

A breast treated in this manner will be ready to resume its function in from seven to ten days. This treatment is, however, applicable only to fresh abscesses with healthy granulating walls. Where the abscess has persisted for weeks or months and the interlobular, cellular tissue has been destroyed and requires removal, it is not applicable. Here the method of Shields is to be recommended:

An incision is made over the seat of the abscess large enough to admit the index finger of the operator and this is deepened until pus flows; the finger is now passed into the cavity and it will be found that the finger may be brought fairly near the surface in a dependent position. In this situation a free opening is made large enough to well evacuate the pus. If the finger be now introduced it will be found that the pus has burrowed about and is contained in areas bounded by fibrous septa. A large drainage tube is passed through the large opening, the anterior opening is closed and painted over with collodion. The tube is left as long as needful, and is subsequently slowly shortened; the scar is hidden by position and volume of gland which makes it a desirable operation in any case where for cosmetic reasons a scar on the anterior surface of the breast is objectionable.

125 EAST NINETY-FIRST STREET.

NOTES ON SURGICAL SHOCK.

G. Frank Lydston, M.D.,
Professor of Genitourinary Surgery and Syphilology, Chicago College of Physicians and Surgeons,
CHICAGO, ILL.

It is safe to say that the possibility of death from shock, or from the action of the anesthetic upon the cardiac and respiratory centers, is the principal element in the sense of responsibility which every surgeons feels as he stands knife in hand over his patient ready for the performance of an operation. All operators will agree with me that the most harrowing experiences of their careers have been the instances in which the patient has died or even apparently died upon the operating table. Cases of death from shock occurring shortly after operation are second only to the foregoing in imposing a tremendous weight of responsibility upon the surgeon.

I believe that I can say without fear of contradiction that a large majority of operators do comparatively little in the way of prophylaxis of shock and untoward results of anesthetics. The operating room in which little or nothing is done in the way of prophylaxis of shock or anesthesia accidents is, however, always the scene of great activity after an accident has happened. Cardiac stimulants are often given that should have been given before the operation was begun. Narcotics are administered in some cases which could more logically have been used prior to the operation.

There is no question that the fear and anxiety which the patient experiences prior to the operation are often responsible for untoward results apparently due to the operation itself. Too little attention is paid to this psychic factor in shock and anesthesia accidents. Nervous, excitable and cowardly patients are usually handled in precisely the same manner as are those who calmly approach the surgeon and philosophically await his verdict and such subsequent operative procedures as he may decide upon.

Unless there is some positive contraindication, I believe that it is wise in the majority of cases to administer morphia hypodermatically a short time prior to the operation. Cardiac stimulants, especially strychnia, may be indicated for the relief of psychic shock which already exists prior to the operation, or for the prevention of shock which is likely to come later. Alcoholic stimulants have a certain limited range of application here. It would be out of place for me to discuss here the dosage of narcotics or stimulants to be used prophylactically. Obviously this will vary with the individual case and must be left to the judgment of the operator.

One of the important cardinal points in the treatment of shock or suspended animation from anesthetics is not to rely upon any one method of resuscitation. Artificial respiration should be conjoined with the hypodermatic administration of stimulants and the application of heat to the extremities and to the precordia. The hot water bottle applied to the precordia has seemed to me to be of especial service. Digitalis and strychnia injected hypodermatically are, as every surgeon is aware, of greater or less service. I would suggest, however, that where strychnia is given in cases of severe shock or suspended animation, the dose should be a large one. One-fifteenth to one-tenth of a grain may logically be expected to be of much more service in an emergency than the smaller doses usually given. Single doses of one-sixtieth or even one-thirtieth of a grain are unreliable. Obviously, repetition of the larger doses is not to be thought of. I have seen apparently good results, both in anesthesia accidents and in surgical shock, from so-called massage of the heart. I have seen other cases, however, in which I am confident that the so-called "massage of the heart" was disastrous, merely because it consisted essentially of more or less severe and rapid concussion of the epigastrium, i.e., concussion of the solar plexus. The effect of half a dozen relatively light blows planted by Mr. Corbett upon John L. Sullivan's epigastrium will be recalled as a pertinent illustration of the untoward effects of concussion in this region.

Rapid divulsion of the anus sometimes stimulates primarily the respiration and secondarily the heart's action in a most effective way. Transfusion of saline solution or the direct transfusion of blood is unquestionably of great value in the treatment of surgical shock. I believe that the former should be more often administered prophylactically during the operation than is the usual custom.

The most powerful stimulant of the heart's action, so far as my observation goes, is the intravenous injection of pure aqua ammonia. This can be used in doses of from twenty minims upward by means of the ordinary hypodermatic syringe in cases in which the veins are sufficiently prominent to be accessible. If an incision is necessary to expose the vein, it should be made. I learned the value of this method of administering ammonia at the New York Charity Hospital many

years ago in the case of a woman who apparently suddenly expired as a result of a mitral heart lesion. It so happened that the senior surgeon and myself were in the ward at the time. The hypodermatic syringe and the ammonia being immediately accessible, the idea flashed upon us that the injection of the ammonia into the veins would do no harm under existing conditions, even though we obtained no benefit. The woman revived and lived for some months afterward with an arm which woefully betrayed a lack of technic exhibited by the two young surgeons.

In a recent case of my own of post-operative shock in a patient whose condition prior to operation was such that it required considerable assurance to operate upon him at all, the operation being a very difficult prostatectomy, the respiration had ceased; the pulse was imperceptible and the cardiac action almost so, and the reflexes were completely abolished. Nitrite of amyl, the application of heat and strychnia had been tried without avail. Although the case seemed hopeless, I resolved to give it the benefit of a doubt and injected twenty minims of pure aqua ammonia into the median basilic vein. The patient slowly revived and is now rapidly recovering from the effects of his operation.

With reference to the danger of injecting aqua ammonia, I will state that unless the technic is at fault, accidents will not occur. If the needle is fairly within the lumen of the vein, if the vein is of good size and if the contents of the syringe injected slowly, no local reaction whatever need be apprehended.

KNEE-JOINT RESECTION FOR TUBERCULOSIS.

Resections should be made as simple as possible. surgical asepsis should be perfect. Diseased tubercular bone should be cut away without attempting to remove it entirely, yet without leaving an overwhelming amount of necrotic material for physiological reparative processes to take care of when the disease is extensive. The vitality of the tissues should not be impaired by unnecessary mechanical injury, cauterization or strong solutions, because tubercle bacilli cannot be eradicated by such applications, and because severe treatment produces necrosis that delays healing and retards union of the bones. The patella should be removed, the wound washed with normal salt solution, the capsule of the joint sutured and a plaster cast applied.—H. W. MARSHALL, in *The Boston Medical and Surgical Journal.*

THE USE AND ABUSE OF CERTAIN DRUGS IN THE TREATMENT OF SHOCK, IN ITS RELATION TO EMERGENCY SURGERY.*

EDGAR A. VANDER VEER, M.D.,
AND J. L. BENDELL, M. D.,
ALBANY, N. Y.

In discussing the treatment of shock in its relation to emergency surgery, no attempt will be made in this paper to deal with theoretical considerations. Nor is there a desire to bring before you original suggestions in the form of surgical therapeutics. The following remarks are simply intended to record some of the observations made during a somewhat active surgical service, based upon a series of cases occurring principally among injured railroad employes. In a group such as the latter, emergency surgery finds one of its widest fields of usefulness. In this class of work the surgeon is frequently called upon to think quickly and to execute his plans with despatch. A prearranged and definite routine fitting groups of cases is a necessity if the greatest amount or help is to be brought to bear upon the largest number of individuals who have been stricken.

General precautions, such as efficient first aid to the injured, rapid transportation to a hospital and temporary treatment on the part of house officers and nurses until the arrival of the surgeon in charge, are of course essential to the proper management of a case. These matters will not be taken up in detail, as it is the object of this paper to deal more particularly with conditions that confront the surgeon in his personal care of the case prior to, during the course of, and subsequent to the operative attack, although many of the ideas expressed are applicable to non-operative cases as well.

In dealing with this subject, we have limited ourselves at this time specifically to a consideration of certain drugs that have been found of value in combating shock, with a brief review of the methods of administration, as gained from personal experience. For purposes of convenience, we have roughly divided the subject into two parts. First, shock, due primarily to loss of blood, as in crushing injuries of legs and arms, where, through rupture of large vessels, the patient becomes exsanguinated. Second, cases of severe trauma without great loss of blood, producing a condition of shock *per se* with lowering of vasomotor tone.

*Read by title at the 21st Annual Meeting of the New York and New England Association of Railway Surgeons.

In all cases of shock, either brought about directly through loss of blood or in any way aided by the latter, the administration of normal salt solution is a matter of routine. This procedure, of course, is wellnigh universal, and although its practice is common, yet, like all surgical therapeutic measures, there are certain points in connection with its use that will bear discussion.

The heart normally pumps against a definite resisting force, the blood-filled vessels. If in the peripheral circulation, the vascular walls are suddenly ruptured, with a consequent loss of content, there is produced a condition whereby normal cardiac resistance is lessened. Hence the heart, with its muscular contractions, still goes on with its share of the work, but having a decreased amount of force to pump against, slowly but surely wears itself out by expending its force unopposed. Thus the normal physiological state changes to a pathological condition.

Under such circumstances, the addition of a substance to the organism most nearly approaching the normal blood stream furnishes Nature with an artificial but nevertheless an efficient means of restoring the disturbed equilibrium. Given, however, a condition of surgical shock, with loss of vasomotor tone not dependent upon vascular depletion, and the addition of fluid to a body containing an already crippled heart may work havoc. The indiscriminate use of normal salt solution in conditions such as the above, not dependent upon actual loss of blood, is unnecessary and contraindicated. It is a matter of necessity to administer saline solution under certain circumstances, but in others it is an act to be condemned.

Our routine method consists in the injection, subcutaneously, of 750 cc. of saline solution as an initial dose, given slowly and continued as necessary.

Although it is a somewhat general practice to insert the needle in the subpectoral area, a more convenient and safer location is found at the junction of the second right costal cartilage with the rib, having the needle point slightly downward toward the axilla. The lymph channels in the latter area readily absorb the fluid as it enters underneath the integument. The solution should not be cooler than body temperature, and it should be allowed to run out of the needle, before the latter is inserted, a sufficient length of time so that it becomes heated to the proper degree to enter the body, in most cases the interior of the connecting rubber tube having chilled the solution during its course.

As a matter of routine the above method is used, although under certain conditions the solution may properly be administered in the form of continuous proctolysis, drop by drop, after the method of Murphy, or intravenously.

In the treatment of shock by means of drugs (exclusive of normal salt solution), in common with the majority of surgeons, we have abandoned most, if not all, of the one-time honored remedies. This especially holds true of strychnia, in years gone by the *sine qua non* in the field of stimulants for surgical shock. The experiments of Crile, supplemented by the clinical findings of numerous of our best known men, we have found to be in keeping with our own personal experience. At the present time, considering shock as a condition of diminution of vasomotor tone, we have found strychnia of little avail as a rapid and efficient means of producing increased blood pressure. Consequently it has been cast aside from our surgical armamentarium.

Each and every preparation of digitalis has met the same fate. The length of time required for this drug to act, together with the uncertainty of power of the individual preparations, in our own experience has rendered it well-nigh useless in conditions where formerly it may have been indicated. The sheet anchors, so to speak, that we have come to depend upon in the way of drugs are three in number: Camphor, adrenalin chloride and morphine. The first, as it is a rapidly diffusable cardiac stimulant, is used rather frequently where danger signals in the form of suddenly impending collapse are encountered. For example, either before, during the course of, or subsequent to an operation the patient suddenly blanches, the pulse weakens quickly or stops entirely and the respirations cease. Such a syndrome as the above is best combated by the hypodermatic administration of camphor in the form of sterilized camphorated oil, given in doses of 15 or 20 minims and repeated if necessary. In this connection, however, a note of warning is to be sounded. The use of camphorated oil as a routine and continuous form of medication is to be condemned from two standpoints. First, camphor, from a pharmacological point of view, when used over a considerable period of time, acts as a distinct renal irritant. Second, from time to time, even under conditions that so far as could be judged were aseptic, the only constituents of the preparation failed to absorb properly, with a consequent abscess formation that required incision and drainage at some future date. These facts it is well to impress upon surgical house officers of

hospitals, in order to obviate embarrassing post-operative conditions. Nevertheless, in an emergency the use of camphor as outlined above is, in the great majority of cases, not only extremely satisfactory, but without any great element of danger.

In the second drug mentioned, namely, adrenalin chloride, the surgeon has at his command a means to raise vascular tone almost equal to the use of morphine as an anodyne. The long continued injection of adrenalin on certain of the lower animals, notably rabbits, has been shown, experimentally, to produce conditions of arteriosclerosis. Furthermore, in certain conditions predisposing to pulmonary edema in man its administration over relatively long periods of time has proven dangerous. Be that as it may, in the vast majority of instances adrenalin, when properly indicated, serves as a veritable sheet anchor to the surgeon. It has been found to be of distinct value in those cases requiring a prop to failing blood pressure both before and after operation. The picture of the railroad employee mangled and requiring an amputation high up through the thigh, whose condition of extreme shock prohibits immediate surgical intervention because of fear of death on the table, is familiar to all. The use of adrenalin chloride, given subcutaneously in doses of fifteen minims every fifteen minutes for four or five doses, has been of no small benefit in these cases. In fact, time and again it has been given in this way for an hour or more and continued over a period of several hours after the first four or five initial administrations, in doses of ten or fifteen minims every hour or two. The heightened blood pressure is evinced, not only by the sphygmomanometer, but by the general subjective and objective symptoms as well, following such a course of procedure has been shown on many occasions. As before mentioned, those subjects in whom a pneumonia, complicated by pulmonary edema, is to be feared, should be watched with especial care whenever adrenalin is used over any long period of time, for its administration under these circumstances can only be fraught with danger. It has been a source of surprise and wonderment that the emergency kit of the general practitioner so seldom contains either camphorated oil or ardenalin. The use of both is so obvious in certain states of emergency surgery that the absence of them from the equipment of many is hard to understand. How common the spectacle of the practitioner suddenly summoned to the scene of an accident, well supplied with strychnia and nitroglycerin, and not hesitating to use either or both at a moment's notice; sometimes, and very properly, an injection of morphine as well.

We say sometimes, for even the use of morphine (the third drug mentioned), with its rapid and wonderful power as an anodyne, is not nearly as frequent as it should be. Doubtless many a life has been saved and many a one lost just because the physician either did or did not administer morphine in sufficient dosage to tide his patient over the shock and nervous excitement. The use of morphine, however, we are glad to say, is more general than the abuse of strychnia and nitroglycerin, although the custom of giving a "hypo" of either or both of the latter two is far more universal than wise. As a general proposition, strychnia as commonly employed does no definite good, while nitroglycerin may work positive harm because of its vasodilator qualities.

So, then, like the trinity of faith, hope and charity, "we have these three"—first, morphine, the use of which is obvious and needs no further comment; second, camphorated oil, for immediate and imperative cardiac collapse; third, adrenalin, for administration over comparatively long periods of time as an efficient aid in the production of heightened blood pressure.

METHODS OF EMPLOYING, AND INDICATIONS FOR THE USES OF THE D'ARSONVAL CURRENT IN MEDICINE AND SURGERY.*

WM. BENHAM SNOW, M.D.,
NEW YORK.

The institution of physical agents and other advances in medicine are developing a science. Uncertainty is being rapidly supplanted by positive medicine and a promise to cure our patients is becoming less and less a stamp of quackery.

The student here, as in every progressive science, is from time to time confronted with results which are at first surprises to be explained, and certified by a succession of similar results under similar conditions. Others will be readily shown to be accomplished in conformity with the normal physiological law.

The well established mechanical effects of the static current in softening indurated tissue, thereby re-establishing local metabolism and repair, have passed through the process of demonstration and are now accepted. The more recent innovation—

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the effects accomplished by the d'Arsonval methods which I am to consider—seems also to be generally demonstrable in full accord with physiological principles.

With the high-frequency current effects are produced which are difficult to explain and others which are readily demonstrated as affecting pathological conditions. That which is difficult of explanation is the rationâle of the effect of the current in lowering blood pressure. The demonstrable thermic and the antiseptic effects of the direct d'Arsonval method are readily recognized and also the physiological results in the prompt production of hyperemia in the path of the current between the two electrodes, with the destructive action when carried to the extent of producing coagulation necrosis.

In 1893 Prof. d'Arsonval, the eminent physiologist of Paris, first published his arrangement of condensers with a solenoid—a new high frequency current. This arrangement was a modification of that of Prof. Wm. J. Morton, which he named the "static induced current"—the first arrangement which produced a high frequency current.

The arrangement of the d'Arsonval current (Fig. 1) consists of two Leyden jars connected one to each side of the source of the electrical energy as to the terminals of a static machine or Ruhmkorff coil. A solenoid consisting of several circular turns of wire is connected at the extremities to the outside coatings of the Leyden jars. From the terminals of this solenoid or coil, connecting cords are attached for administering the current to the patient. To complete the arrangement, it is necessary that a spark be discharging between the opposite pole terminals of the machine; the oscillations thus produced set up by induction similar induced operations in the circuit outside of the condensers, which are again modified by the connecting solenoid. D'Arsonval discovered that from a high potential source of electricity he was thus able to produce a current strength of high frequency sufficient to light an incandescent lamp of considerable candle power connected in the circuit.

The solenoid so modified the character of the current that the oscillations set up in the outside circuit were of such high frequency as to entirely damp out the contractions produced by the static-induced current, when the coil is not in circuit. In other words, the current is thus rendered one of very high frequency, a rate above that which produces contractions, i. e., above 10,000 per second. The effect is virtually to step down the current to one of larger amperage and lower potential with higher frequency. It is this property of the current which accounts for the thermic effects produced in the administration of the auto-conduction or auto-condensation method, and is even much more marked from the administration of the direct d'Arsonval method.

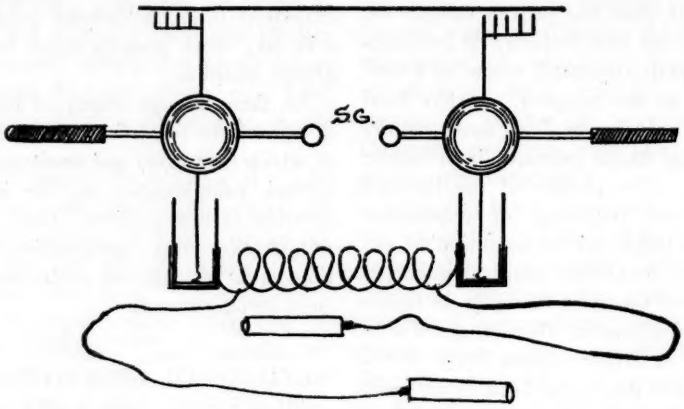

FIG 1. D'Arsonval Current.

D'Arsonval later published the effects of this current upon the blood pressure and general metabolism, but probably little dreamed of the important place its various modifications as produced with the modern types of apparatus were to fill in therapeutics.

For the production of the effects upon hypertension and metabolism, he introduced two methods which he termed the *auto-conduction* and *auto-condensation* methods. By the former method (Fig. 2) the patient is placed within a large solenoid which encircles his body without coming in close contact with his person. This solenoid is

connected as the d'Arsonval solenoid is, from either end to the outside of the condensers or Leyden jars.

The auto-condensation method, the one most in favor on account of its convenience as well as its equal, if not greater efficiency, is arranged as follows: (Fig. 3). Upon a couch or table is placed a sheet of metal approximately five feet in length and twelve or fourteen inches in width, to which is connected one terminal of the d'Arsonval circuit. Over this is placed a cushion of insulation material about three inches in thickness. The cushion should be approximately six feet in length and twenty inches in width. Upon this the patient lies with the lower extremities extended. To the other terminal of the d'Arsonval solenoid is attached a bifurcated cord at the two terminals of which are metal electrodes, or a single cord with a long metal electrode, which is held in the hands of the patient. By this method the patient receives the current from one side of the d'Arsonval circuit, while he is insulated from the other side, the effect being to charge his whole body and discharge it with the frequencies of the alternations. When administered in this way from a direct current source, it is easily demonstrable that the patient receives a marked predominance of one polarity, that is, that the effect, recognized by the physicists, of insulating the patient from the opposite pole, together with the charged capacity of his body, produces what is designated as a pulsatory current, one with which the inverse sine is, at most, insignificant.

I always arrange the apparatus to have the positive predominating polarity going to the patient, instead of the negative. The polarity can be readily determined by holding a vacuum electrode in the hands of the operator, when observing that the green fluorescence is entirely at the end of the tube in contact with the patient; the stream of negative electrons will then be passing from the operator to the patient, who will then be positively charged.

After these methods were described by d'Arsonval and published in the early '90's, it was more than ten years before their value was duly recognized.

At the present time the rank and file of the medical profession know little about its value or indications, and some antagonize its introduction. In other words, there are relatively few in the profession who are sufficiently conversant with the value of this method in the treatment of hypertension, for the prevention or relief of the high blood pressure associated with arterio-sclerosis either as a cause or consequence.

Different theories as to the physiological action of this current as affecting blood pressure, have been advanced, but no definite conclusion has been reached as to what the *modus operandi* of the current is, as affecting the lumen of the arteries. It is sufficient to say, however, that the muscular coats of the arteries are generally relaxed and that this is accomplished without depression of the cardia. The effect is generally cumulative when administered from day to day, there being a marked additional fall of the blood pressure until reduced to the compensatory point, or a degree of dilation is reached at which the pressure will remain fairly constant, when the tension, as indicated by the sphygmomanometer, will return stubbornly to that point.

The dosage which I find gives the best results with auto-condensation is 500 milliamperes with the lowest possible potential for twelve minutes.

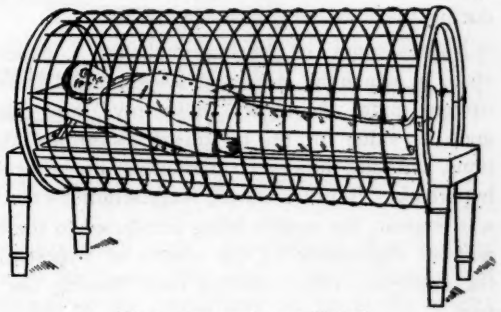

FIG 2. Auto-conduction Method.

With static machines, which produce 200 to 300 milliamperes, twenty minutes will suffice. With this dosage we obtain an average fall of from ten to forty millimeters of mercury.

The auto-condensation method is often designated as the indirect d'Arsonval method in contradistinction to the direct d'Arsonval method which is applied with electrodes from the two terminals placed upon opposing surfaces of the body of the patient. The direct method is used for its thermic effects. The effect of the direct d'Arsonval current employed for producing hyperemia will hereafter fill an important place in therapeutics.

It is difficult to say to whom the origin of this method should be ascribed. In 1906, Dr. Frederick de Kraft, in a paper read before the American Electro - therapeutic Association, described the method as a therapeutic procedure. The method was employed by him in the treatment of various joint affections and infectious conditions in which it had been found valuable by him.

Doyen, of Paris, introduced a method of employing this current by placing a large indifferent electrode in contact with the patient and a small electrode at the other terminal for the purpose of destroying redundant or malignant tissues. The method was known as "Doyen's method." By this method, the small electrode when applied to the patient produces an intense degree of heat where the small electrode is in contact, which may either cause coagulation-necrosis, or actural cauterant effects, varying with the volume of the current. The application is followed by a slough with destruction of the tissues treated. This takes place when the tissues are heated above 70 degrees C.

This method is now advocated by Doyen and Nagelschmidt, and has been introduced into this country and is being tested at present in the New York Skin and Cancer Hospital, with the apparatus designed by Doyen.

I have employed the d'Arsonval current for its thermic effects since 1908, with the object of producing the local effects of hyperemia.

Nagelschmidt, of Berlin, published a paper in 1910, in which he employed the direct d'Arsonval current under the term "Diathermy," and dilated upon its value for the treatment of various conditions, without, however, attributing the effects to hyperemia. In other words, Nagelschmidt's method was empiric, the results being attributed to the heat without cognizance of the effects of hyperemia—the important effect derived from heating the tissues.

The present status of development of this interesting procedure has awakened great interest as a newer departure in electro-therapeutics which is now recognized as an important method of producing hyperemia for the treatment of infection and local and general conditions of sluggish metabolism.

This current produces no electrolytic decomposition as is readily demonstrated by placing two metal electrodes connected with the opposite poles of the d'Arsonval current in a vessel containing a solution of potassium iodide and applying the current until the solution boils, when no change takes place; whereas a mild constant (galvanic) current rapidly decomposes the solution with the characteristic change of color. This experiment demonstrates two important principles: (1) That large currents can be passed through the body without producing any unfavorable electrolytic action at either pole; and (2), that the thermic effects are pronounced.

Another experiment will demonstrate that the thermic action is not confined to the surface in contact with the electrode, or the parts immediately beneath the surface; but with a general uniformity throughout the interpolar tissues, with some increase about midway between the electrodes if they are of the same size, and in contact with opposite surfaces. If we place the white of an egg in a flat bottomed dish and place two electrodes at a distance apart and turn on the current, the egg albumen is promptly coagulated in the path of the current between the electrodes, but not elsewhere. This experiment demonstrates two things: (1) That when the necessary current strength is employed relative to the size of the electrode, very marked thermic effects are produced; and (2) that the thermic effects are confined to the interpolar field—the adjacent substance or tissues being unaffected. The same facts can be also demonstrated upon a piece of liver, which may be promptly cooked throughout the path of the current between the two electrodes and not at the surface only.

It can also be demonstrated with a long potato or other organic substance that the greatest temperature is a little to one side of midway between the electrodes if of equal size, and nearer the smaller one if one electrode be larger than the other, by placing thermometers in holes made at varying distances from either end in the path of the current. This experiment indicates (1) that the greatest heat effects are approximately where the oscillations from either end meet, a little nearer what would be the negative than the positive end; (2) that when a large indifferent electrode is opposed to one of very small size, at the surface in contact with the latter coagulation-necrosis will be produced, when considerable current is employed. These physical demonstrations form a basis for regulating therapeutic calculations to varying conditions for localizing the heat effects.

Heat is now recognized by all modern authorities to be a rate of vibration in the molecules of a body—a rate below that which produces light and above that which produces sound. According to Ganot, "the heat of a body is caused by an extremely rapid oscillating or vibratory motion of its molecules, and the hottest bodies are those in which the vibrations are most rapid and have the greatest amplitude." Furthermore, "a heated body sets the other in rapid vibration, and the vibrations being communicated to material objects, set their particles in more rapid vibration; that is, increase their temperature."

Heat partakes of its usual physical characteristics when applied to the animal organism. *Tissue expansion,* with relaxation and relief of pain is pronounced from applications of heat, and naturally indicates its employment for the relief of pain. The systematic use of the hot poultice to favor and further the progress of suppuration was too often the effect sought, rather than to arrest or abort it. The effects of heat upon the vaso-motor mechanism is exerted both upon the deep spinal centers of the vaso vassorum and upon the parts exposed.

Heat has long occupied a valuable place in therapeutics as a surface application, the effects of which have been more or less limited to the skin—entirely so, except when employed with great intensity from dry hot air apparatus, which employ high temperatures, or from the sources of radiant light and heat. Dr. Gilman Thompson demonstrated in experiments on a cat that when heat was applied to animal surfaces employing temperatures that would not burn or blister the skin, little or no heat was conducted beneath the skin, because the skin becomes rapidly hyperemic and the circulation so accelerated as to convey the heat away convectively. In case extreme temperature is applied, however, at 400° or 500° F. to an arm or leg protected with Turkish toweling, to absorb the perspiration and prevent blistering of the skin with a boiling perspiration, the whole limb will become more or less hyperemic. In the case of radiant light and heat as projected from sources of radiant energy, the tissues are heated throughout so far as the rays penetrate and are converted into heat units fulfilling the laws of conservation of energy. This form of radiant energy is stated by Kellog to pass fully six inches into the tissues. These effects are "diathermic" and not produced by the high frequency current.

The direct d'Arsonval current surpasses all other methods of producing profound localized thermic effects; because (1) it can be localized; (2) the effect of hyperemia persists longer; and (3) it can be applied efficiently and with precision to deep seated tissues.

The therapeutic effects of heat are not generally understood nor the possibilities of physiological hyperemia as produced by modern methods.

The thermic effects of this current are due not only to the passage of the current of relatively large amperage and comparatively low voltage through the tissues, but also to the frequency and amplitude of the oscillations set up in the tissues by the moving electrons. In other words, the heat produced is due to the molecular activity produced in the tissues, both by the oscillatory action of the current and the strength of the current passing.

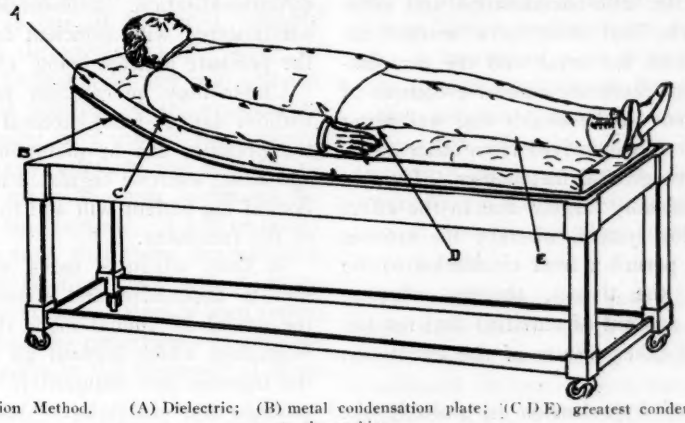

FIG. 3. Auto-condensation Method. (A) Dielectric; (B) metal condensation plate; (C D E) greatest condensation of current next to the cushion.

The effect sought by this method is the induction of local hyperemia. The characteristic effects of hyperemia in the tissues are three, which increase the local tissue resistance—increased nutrition, increased metabolism and increased local phagocytosis. Interest in the effects of hyperemia as a therapeutic measure has been generally aroused by the work of Bier and his followers, but they have uniformly failed to refer to the three effects named. The methods of producing hyperemia advocated by Bier do not compare in efficiency with radiant light and heat or the direct d'Arsonval current.

The therapeutics of the d'Arsonval current include (1) the general or constitutional effects as affecting metabolism, and of the vasomotor system; (2) its local effect as producing localized hypere-

mia, due to the heating of the tissues in the path of the current between the two electrodes; and (3) the local destructive effects from the employment of a strong current with a small electrode at one operating terminal.

The beneficial effects of the high frequency d'Arsonval current may be demonstrated as arising from one or another of the previously described methods of application.

The general effects of the current as influencing metabolism are easily demonstrated both clinically and from the chemical examination of the secretions—the urine and perspiration. It has often been found with the auto-condensation and auto-conduction methods, that there is a marked increase of solids with the urine and the perspiration, as well as that there are clinical evidences of general improvement in the health and well-being of the patient such as are derived from other measures which improve general metabolism. The latter result is undoubtedly largely due to the effect upon the vasomotor system, whereby the arteries becoming relaxed, permit a freer circulation of the blood throughout the tissues, thereby effecting an increase in the amount of nutrition that reaches the capillaries and other effects of the circulation upon metabolism.

The reduction of hypertension is probably the most important effect of d'Arsonvalization, and one of the most valuable innovations in modern therapeutics. The reader of medical literature must be impressed with the concessions of the leading observers that in drug therapeutics and diet alone, there is little that can be accomplished in reducing hypertension—the generally acknowledged condition associated with arterio-sclerosis.

Arterial hypertension regularly leads to degeneration of the muscular coats of the arteries, on account of the interference with the metabolism of the muscular cells when they are kept in a state of tension.

With the auto-condensation and auto-conduction methods very much more can be accomplished than with other physical methods employed for treating hypertension. These, however, as all other methods must be associated with the systematic regulation of diet and exercise. When dietary precautions are added, the results accomplished by the employment of auto-condensation are more remarkable, which is not the case with diet and other methods.

In advanced cases of arterio-sclerosis, except those in whom the arteries have become generally sclerosed so that no response whatever follows the administration of auto-condensation, a patient may be kept for years in a condition of safety by judicious attention to diet, exercise and the more or less frequent administration of d'Arsonvalization. In these patients it will be necessary to keep up the administration of the d'Arsonval current at regularly repeated intervals in order to maintain the tension at approximately 140 to 160 m.m.

There are very few cases of hypertension in which the compensation point, or the tension that is required to force the blood throughout the circulatory system, will exceed a tension of 160 m.m.; therefore, in advanced cases which respond to d'Arsonvalization, auto-condensation should be administered with sufficient frequency to maintain the pressure at least below 170 m.m.

Under these precautions patients may be kept without danger from cerebral hemorrhage. When the pressure can be maintained at approximately 150 m.m., exercise regulated to the physical condition of the patient will add to the beneficial effects of the treatment.

In these advanced cases, the regulation of the diet is imperative and should generally exclude the use of all animal foods rich in purins, and of vegetables which contain an excess of purins, as the legumes and indigestible foods such as boiled cabbage and cauliflower. Milk can be used judiciously either fermented or otherwise, according to the effects upon the individual. Eggs must be eaten with moderation, and shell fish, the least objectionable of the animal foods, should never be used indiscriminately as a substitute.

In cases of hypertension in which marked degenerative changes have not taken place in the muscular coats of the arteries, it is possible to maintain a fairly normal condition by the adoption of a dietetic regime after the tension is systematically reduced by auto-condensation, with subsequent administration at regularly requisite intervals until such a time as the patient by diet and exercise has regulated his habits, so that he may be able to maintain a normal or very much lower degree of hypertension. It is always best in these cases to keep the pressure as low as 130 to 120 m.m.

The value of auto-condensation in the treatment of hypertension was summarized by the writer in the following summary in a recently published paper, as follows: (1) "D'Arsonvalization is undoubtedly the most practical and efficient means of relieving arterial hypertension. (2) D'Arsonvalization produces no depression upon the heart and is consequently contraindicated in no cases of cardiovascular disease, except in those cases in which

the hypertension is compensatory. (3) Except in cases of high blood pressure arising from other obstructing conditions, the tension should be lowered in all cases within a limit of safety, and maintained there by the conjoint employment of d'Arsonvalization and a diet limited in quantity and relatively free from purin bodies. (4) Under systematic routine management hypertension is thus usually controlled, the advance in most cases of arterio-sclerosis delayed, and the dangers arising from complicating conditions deferred."

The indication for the induction of hyperemia as by the direct d'Arsonval method, includes the treatment of various conditions or types of localized infection, and is one of the most valuable advances in modern therapeutics, either alone or in conjunction with radiant light and heat and the Roentgen ray. It is possible by these means to control the early stages of localized tuberculosis, pyogenic and gonococcic infection and probably of many other types of infection whose limitations depend upon an active phagocytosis. It will be finally demonstrated, I am sure, that these measures are capable of materially limiting the course of pneumonia and typhoid fever, as has already been shown by those who have had the opportunity of employing these physical agents in the treatment of those conditions.

The action of the direct d'Arsonval current in producing hyperemia is due to the physiological response of the vasomotor mechanism to the heating of the tissues by the passage of the current directly through them. This is accomplished by placing carefully adapted and well moistened metal electrodes on the opposing surfaces of the skin or mucus membrane and passing the current directly through the parts to be treated with a current strength regulated to the toleration of the patient.

The results obtained by this method in the treatment of tubercular and pyogenic infection have already demonstrated its value. The application may be made to any suspected condition, because its use is fraught with no danger, which renders its employment as a prophlactic safe, with the promise of a successful issue in a large percentage of infectious cases.

The results obtained by the treatment of tubercular infection will depend very largely upon the stage or extent of the infection. The writer has used the method successfully in the treatment of the tuberculous knee joint in the early stages; in tuberculosis prostatitis, lymphatic glands, and under his direction, it has succeeded in the treatment of one case of tuberculosis of the kidney.

In the treatment of tubercular adenitis it is my custom to precede the use of the high frequency current by one or two prolonged exposures, or a series of short exposures to the *x*-ray, in the latter case to the extent of producing a dermatitis, and then introducing the use of the direct d'Arsonval method employing a current strength regulated to the toleration of the patient. The application should be made daily or twice daily in order to render the local hyperemia as constant as possible during the course of treatment.

In early tuberculosis of the knee joint, favorable results have been obtained by application twice daily of the direct d'Arsonval current for six weeks without having previously employed the Roentgen ray. A current of 1,000 milliamperes was passed from side to side through the joint each time for twelve minutes. By these commbined measures the curative effect in adenitis is obtained without destroying the structures of the lymphatic glands, or producing the disfiguring effects of telangiectasis of the skin, as when several series of the *x*-ray are used.

The writer has one case of Addison's disease under observation, which has been exposed to the *x*-ray, and is now being treated with the direct d'Arsonval current, and is reported to be making satisfactory improvement. This case was a very advanced case of Addison's disease, with pigmentation of the skin well marked. The treatment is employed upon the same principles as in other tubercular affections. This method is always indicated, always harmless, and, I believe, offers more for the relief of tubercular infections, including pulmonary tuberculosis and tubercular peritonitis than other methods when employed in conjunction with the usual dietetic and hygienic regime.

In the treatment of pyogenic infections including carbuncles, boils furuncles and whitlows, a similar routine is employed. In the stage of infection before pus with the tender indurated nodules present, the direct d'Arsonval is followed by the static wave current or the static brush discharge to soften and dissipate the induration of the inflammatory ares, promptly curing the trouble. The object of preceding static treatment with a measure which induces hyperemia, is to bring a large number of phygocytes into the field surrounding the induration; then when the germs are turned loose they will be destroyed by the phagocytes. In the stage before pus forms the number of the germs is small, and under this condition are promptly destroyed by the phagocytes. There is, therefore, no danger in resolving the induration

with the static current if it precede the formation of pus.

In the treatment of carbuncles and large boils it is advisable to employ the other plan of treatment by using first a long exposure to the *x*-ray, which the writer usually makes for forty minutes, with an *x*-ray dosage equivalent to one milliampere of current passing through a low vacuum tube held at a distance of from twelve to fourteen inches from the surface. In these cases, twelve hours after the *x*-ray exposure, he makes prolonged application of radiant light and heat followed by fifteen minutes of the direct d'Arsonval current, employing a vacuum electrode over the surface of the carbuncle, continuing the use of the light and current twice daily until cured. The result of these combined methods offers a means of promptly curing carbuncles.

The general application of these methods in the treatment of infection apply in all cases. It is not of importance, therefore, to enumerate the other localized infections which are included as indications for this plan of treatment.

The current is applied with metal electrodes, well moistened and closely applied to the surface. We find it important that the electrodes should be turned up at the edges and corners so that the rounded surface lies against the integument; otherwise there may be electrical discharges from the edges, which will produce a burning sensation. This will occur also wherever an electrode is not in close contact with the skin; when it should be immediately readjusted. Never allow an electrode to remain in a position where there is a burning sensation at the edges or beneath the electrode. Patients should be made to understand this at the outset, lest they assume that the burning sensation is the natural effect of the current; because if it persists, the surface will be blistered. After a surface is blistered it will be impossible to apply the current to that part until it is fully healed.

When it is desirable to treat internal organs as the kidneys or appendix, which lie near the surface, the very large indifferent electrode should be placed upon the surface opposite the affected part, and a small one, not larger than the area affected, over the lesion.

Remarkable effects may be obtained from passing this current through extensive regions as of the abdominal cavity or the chest, by placing anteriorly and posteriorly large electrodes. A current as measured by the hot wire meter of 2,500 or 3,000 milliamperes may often be employed under these conditions with benefit, if not causing special discomfort to the patient. That much heat is being produced in the tissues will be evidenced by the marked perspiration appearing upon the surface of the patient. This will also indicate its effects upon general metabolism. The field of usefulness and possibility of this current, variously employed, is very large, and the fact that no danger attends its employment opens up a valuable field of experimentation which will lead to the discovery of relief for many otherwise incurable conditions.

Doyen's method of treating localized neoplasms, malignant or otherwise, with the object of destroying the local process, is on trial, but requires some skill in the technique, lest too deep destructive processes may be caused by the method.

A large indifferent metal electrode is applied to the surface of the body remote from the area to be treated, and a small electrode is applied to the malignant or other neoplastic growth, and enough current turned on to produce a degree of heat which will destroy the tissue at the site of the small electrode. By this method, localized coagulation-necrosis is effected, which will be followed by a slough very much like that produced by the constant current with Dr. Massey's method.

It will be observed from the foregoing that the indications for the employment of the d'Arsonval current are many and important, presenting remarkable possibilities in the hands of those who become familiar with an accurate technic.

329 W. Fifty-seventh Street.

THE ETIOLOGY OF "GALL-BLADDER DISEASE."

C. W. Louis Hacker, M.D.,
Albany, N. Y.

The study of living pathology has taught us that lesions rarely exist without producing symptoms. They are, however, not always in the region of the diseased organ but may be referred to the distribution of the nerves affected, remote as a result of reflex irritation or generally due to toxemia. They may be mild or variable, especially in chronic diseases, so that unless we make a complete physical examination we may fail in our diagnosis. A complete clinical history is of no less importance for the reason that knowledge of the habits, occupation, environments and previous illnesses of the patient very often solves the diagnosis and suggests the proper treatment. Unless the cause of any disease is known we cannot treat it intelligently and expect a permanent cure. To remove an infected organ

and allow the primary bacterial focus to remain does not protect the patient from similar processes in other susceptible organs. It is for these reasons that I wish to discuss the etiology of "gall-bladder disease."

According to statistics 80 per cent. of the patients suffering from "gall-bladder disease" are women, of whom 90 per cent. have born children. The symptoms of cholecystitis very often begin during the latter part of pregnancy or soon after parturition so that pregnancy is generally considered as an etiological factor. Toxemia or "psychic influence" during pregnancy, I do not believe, ever affected the gall-bladder without killing the individual. It is the effects of an enlarged uterus or parturition upon the surrounding organs which predisposes the patient to "gall-bladder disease."

Some of the so-called "modern" text-books mentions mental depression as a predisposing cause of "gall-bladder disease." Therapeutic results usually demonstrate that it is a symptom and not a cause.

Gall-stones are more frequently found after the age of 45, but this is an advanced stage of "gall-bladder disease" and usually represents years of suffering. Cholecystitis is not an uncommon disease after the age of 25. This is the primary stage of "gall-bladder disease" when a diagnosis is most important for the reason that the process is uncomplicated and the operative risk is practically nil.

Experiments have demonstrated that bacteria may be introduced into the bile and carried by its current into the duodenum without doing harm, whereas simple ligation of one of the large bile ducts is very often followed by inflammation. At autopsies, pathogenic bacteria are very often found in a normal gall-bladder while cholecystitis is frequently associated with conditions that cause kinking or obstruction of the cystic or common duct. These facts tend to prove that the integrity of the gall-bladder depends chiefly on the current of the bile. The cystic duct is narrow and tortuous so that any slight change in the lumen would rapidly interfere with drainage of the gall-bladder. When the bile becomes stagnant bacteria grow rapidly and inflammation occurs very soon. As the process becomes chronic the connective tissue interferes with and may replace the musculature so that the gall-bladder is less able to empty itself. The expansibility of the gall-bladder is also diminished so that ultimately it is unable to act as the "safety valve" of the liver and pancreas. MacCarty has suggested that stagnation of the stomach and disarrangement in the duodenum, liver and gall-bladder might be brought about reflexly by chronic or subacute lesions in the appendix.

Bacteria are probably always the direct cause of cholecystitis but other changes in the composition of the bile which predisposes the gall-bladder to infection should also be considered. Cholecystitis is not an infrequent complication of acute infectious diseases the pathology of which usually shows marked hepatic changes. The liver not only produces bile but also destroys toxic substances which, if allowed to pass into the bile as a result of degenerative changes, would act as irritants in the bile passages. The antiseptic properties of the bile may also be diminished so that pyogenic and pneumococci might readily grow.

"Gall-bladder disease" may develop by continuity but the most frequent mode of infection is probably through the bile. Many facts tend to prove that infection from the duodenum does not occur as often as we have been led to believe. The bacteria found in "gall-bladder disease" are not usually of the type found in the duodenum. Bacteria from this source would have to travel against the current of bile, and during the intervals when bile is not passing into the duodenum the common duct is closed by a sphincter. When the food leaves the stomach the bacteria are greatly diminished in number and their growth is inhibited by the secretions and normal flora of the duodenum. Furthermore, food does not remain long enough in the duodenum for the bacteria to grow.

The bacteria found in "gall-bladder disease" usually have their origin somewhere in the gastro-intestinal tract from which they are carried by the portal circulation to the liver and are excreted in the bile.

Adami and Ford have claimed that bacteria are constantly passing through the intestinal mucosa. If this is true any condition causing stasis in the intestines predisposes the patient to infection of the gall-bladder through the portal system. Pressure of an enlarged uterus or loss of pelvic support with enteroptosis after parturition producing intestinal stasis might account for the frequency of "gall-bladder disease" in women who have borne children. Intestinal stasis due to inhibition of peristalsis may be secondary to an inflammatory lesion in the stomach or intestines which frequently coexists with "gall-bladder disease."

Cholecystitis is very frequently secondary to typhoid fever. In this disease the typhoid bacilli probably enter the portal system through the ulcerated lymphatic patches of the ileum and are carried by the circulation to the liver from which they

are excreted in the bile. After the infected bile enters the gall-bladder it is impossible to tell how long the typhoid bacilli will remain or how much harm they may do. Their presence may be accompanied by no symptoms of cholecystitis and the gall-bladder may become their habitat for many years. For this reason the stools of every patient who has suffered from typhoid fever should be examined for the specific organism before being dismissed. Without this examination it is impossible to determine whether or not they will become "typhoid carriers."

In the discussion of paratyphoid fever Osler says "the sequelæ of ordinary typhoid fever may occur." Guthrie has recently reported a case of cholecystitis occurring during an attack of paratyphoid fever and no doubt there have been many cases in which the etiology was not recognized. The symptoms of the primary disease may be so mild that they are disguised by those of cholecystitis. For this reason a bacteriological examination should be made of the contents of every diseased gall-bladder in order that the patient may be permanently cured and the public protected. Cholecystitis occurring during typhoid or paratyphoid fever should be treated surgically as soon as the condition of the patient will permit. Medical treatment may relieve symptoms but it will not remove the organisms.

There are three lesions of the gastro-intestinal tract which frequently accompany "gall-bladder disease," namely, peptic ulcer, chronic appendicitis and hemorrhoids.

The frequency with which peptic ulcer and "gall-bladder disease" occur in the same patient has attracted the attention of surgeons. During a recent meeting of the Southern Surgical and Gynecological Association Haines stated that he believed that cholecystitis was a phase of the pathology of gastric ulcer and since he has been draining the gall-bladder in connection with surgery of the stomach his immediate results and permanent benefits have been much better. MacCarty has described a case of cholecystitis in which the base of a duodenal ulcer had involved the common duct producing stenosis. Peptic ulcer rarely causes cholecystitis by continuity or involvement of the papilla of Vater. The gall-bladder probably becomes infected through the portal system, which communicates with the "ulcer-bearing area" of the stomach and duodenum by means of the branches of the pyloric, gastric and superior mesenteric veins.

Ochsner found that more than 35 per cent. of his cases of "gall-bladder disease" had suffered from acute or chronic appendicitis. Microscopic evidence of old hemorrhage (old blood pigment) in chronic appendicitis is of frequent occurrence, and is probably always due to infection. This statement is based upon the facts that degeneration of the capillaries rarely occurs at the age when appendicitis is most frequent and trauma plays very little, if any part, in the causation of this disease. In the study of so-called chronic appendicitis only occasional sections showed hyaline changes in the wall of the capillaries. About some of these degenerated capillaries the perivascular lymph spaces were engorged with lymphocytes, but there was no evidence of recent or old hemorrhage. Each area of old blood pigment in chronic appendicitis represents a portal of entry for bacteria to pass into the circulation. If the bacteria of acute appendicitis can produce a pylophlebitis by infection of the capillaries which communicate with the ileo-colic vein why cannot attenuated pathogenic bacteria or colon bacilli invade the gall-bladder through a chronically diseased appendix just as typhoid bacilli invade it through the ulcerated patches of the ileum?

A condition very often found in patients suffering from "gall-bladder disease" is hemorrhoids. These may become ulcerated or fissured without producing subjective symptoms and unless the rectum is examined, they will escape being diagnosed. Hemorrhoids I believe are a very frequent cause of "gall-bladder disease" for the reason that when ulcerated or fissured they establish a direct communication between the infected rectum and the portal system through the superior hemorrhoidal vein. Hemorrhoids very frequently occur during the latter part of pregnancy and after parturition. Very often the hemorrhoidal plexus of the parturient women is lacerated and this affords an excellent opportunity for infection of the portal system. Hemorrhoids or laceration of the hemorrhoidal plexus in the midst of infection may also account for the frequent occurrence of "gall-bladder disease" in women who have borne children. The frequent occurrence of colon bacilli in "gall-bladder disease" suggests a lesion in the large intestine as chronic appendicitis or hemorrhoids. The physiological value of the gall-bladder should always determine the method of treating its diseases. If the organ is functionless or there is suspicion of malignancy, it should be removed. Drainage should be employed when permissible but it will not effect a cure if the primary source of infection, such as peptic ulcer, chronic appendicitis or hemorrhoids is allowed to continue.

206 STATE STREET.

THE TREATMENT OF EYES INJURED BY FOREIGN BODIES.*

JOHN M. WHEELER, M. D.,
NEW YORK.

In considering the subject of the treatment of injuries to the eye by foreign bodies we are concerned chiefly with injuries to the cornea. Small foreign bodies do not usually penetrate to the interior of the globe, and those which strike the conjunctiva of the eyeball with too little force to penetrate to the interior, as a rule, fail to become imbedded in this structure. Furthermore, injuries to the conjunctival and subconjunctival tissues are secondary in importance, since they do not lead to impairment of vision, as injuries to the cornea are prone to do.

The railroad surgeon is not infrequently called upon to remove foreign particles from the cornea, and has reason to feel a sense of hesitation in working on such a delicate structure as the human cornea. It has been suggested, then, that in this paper attention be called to a few of the more important points in handling cases of injury to the cornea by foreign bodies.

In the first place, the surgeon should have absolutely good light and a lens with a focus of about two and one-half inches to condense the light rays upon the foreign particle. In some cases it is necessary to depend upon concentrated artificial light and a magnifying glass to aid the vision of the operator. The cornea is anesthetized by the instillation into the eye of a four per cent. solution of cocaine or a one per cent. solution of holocaine. Complete anesthesia is usually accomplished by three or four instillations at intervals of two or three minutes. Holocaine has a slight advantage over cocaine in that it does not dilate the pupil, and in the cases in question it is usually not desirable to dilate the pupil, as dilatation renders the eye more susceptible to discomfort from light. However, cocaine is always efficient, and for some patients holocaine does not seem to give complete anesthesia, so that cocaine is usually the anesthetic used.

The patient is seated in a chair of such a height that his eyes will be in a position most easily accessible to the surgeon, who stands behind and steadies his head. The light is thrown on the cornea with a condensing lens, and the patient is instructed to keep both eyes open wide and to look with the uninjured eye at a definite object in such a direction that the foreign body can be distinctly seen. The surgeon, with his fingers, assists the patient in holding his eyes open.

A number of instruments have been designed for the extraction of foreign particles in the cornea, but none of them is entirely satisfactory for all foreign bodies. However, I submit to you an instrument which has been in use now about four years. For lack of a better name it has been called a "corneal curette." The instrument was designed especially for the general practitioner for it has seemed to me that there has been a demand for an instrument that is effective and at the same time safe in the hands of a surgeon not especially trained in eye surgery. The edge of the instrument is ground sharp, and should cut with gentle pressure.

The surgeon works the cutting edge of the curette under the foreign body, and, if possible, with a single motion lifts the foreign body from its bed in the cornea. It is not always possible to do this,

FIG 1. Corneal Curette.

especially in the case of emery particles, which break up when manipulated with any instrument; so a point has been provided on the instrument for such foreign bodies as cannot be removed by the cutting edge. In using this point the shank of the instrument is made to act as a guard against penetrating the anterior chamber of the eyeball.

As a rule, if the foreign bodies are removed entirely the little wounds heal up kindly. However, it is a wise precaution to prescribe argyrol twenty-five per cent. or some other mild antiseptic to be used by the patient three or four times a day for a period of a few days, as occasionally infection in these wounds occurs and leads to ulceration of the cornea. If only the superficial epithelial layer of the cornea has been injured, the patient can be promised no impairment in his vision; but when the deeper layers are injured, scar formation always results, and cicatricial tissue in the pupillary area means direct interference with the function of vision. And even if these scars are peripheral to the pupillary area of the cornea, irregular astigmatism of greater or lesser degree results. This astigmatism cannot be corrected by any lens. Hence the seriousness of foreign-body wounds to the cornea from the point of view of vision.

Injuries to the cornea are oftentimes regarded

*Read at the 21st Annual Meeting of the New York and New England Association of Railway Surgeons.

too lightly by both surgeon and patient. Men who are working in shops and are prone to getting foreign particles in their eyes should be cautioned to wear goggles while at work.

Various medicaments have been recommended for the removal of scars from the cornea, but after a scar has once been formed nothing can be applied which will remove it.

If a foreign body has penetrated to the interior of the eyeball, the patient should be sent at once to a specialist trained in extracting bodies from the globe. A radiographer skilled in the work can estimate to the fraction of a millimeter the position of minute or large foreign bodies which have penetrated the eyeball. There is considerable difference of opinion as to the best method of removing these bodies, but after a study of the technic of foreign-body extraction, together with the results obtained, I am convinced that a non-magnetic foreign body hanging in the vitreous should not be submitted to operative interference unless the eyeball has to be removed. But if in contact with the wall of the globe, it may be removed through an opening as near as possible to the site of the foreign body. Magnetic foreign bodies should be drawn into the anterior chamber of the eyeball through the ligament of the lens by application of the giant magnet or through the lens itself if it has been injured. They should then be drawn out of the anterior chamber through the incision in the cornea by application of a small hand magnet.

Although the prognosis for eyes penetrated by foreign bodies is always grave, a large proportion of such eyes should be saved with good vision providing that the lens is not injured, and even in cases in which there has been injury to the lens good vision should follow extraction of the cataractous lens.

DIAGNOSIS OF PERITONEAL EFFUSIONS.

With the patient lying on his back in peritoneal effusions of moderate or small quantity, there is always fulness of the flanks, the degree of fulness depending not only on the quantity of fluid, but also on the relaxation and thinness of the abdominal wall. If the abdominal wall is relaxed there is always more or less flattening of the abdomen anteriorly; if the walls are tensely distended this appearance is obscured. If there is much subcutaneous fat the fulness is even more greatly obscured; edema will also obscure it.—A. MCPHEDRAN in the *Canadian Medical Association Journal.*

THE ABNORMAL TEMPERATURE A SAVING ACT OF NATURE RATHER THAN A RESULT OF DISEASE.*

MARTIN CAVANA, M. D.,
SYLVAN BEACH, N. Y.

Reflection upon the world's progress during the past half century suggests mutual congratulation that we have been so favored as to enjoy this age of wonderful inventions, demonstrations and developments, wherein the opportunities for observation and educational acquisitions, afforded in a single decade fully equal those experienced during an entire adult life-period of most of our ancestry.

In the mechanical arts we observe the workings of modern machinery with a precision and dexterity equaling, if not surpassing, that of the most expert human hands, and the developments for the protection and preservation of human health have been quite as progressive and radical as in the various arts and other professions. Step by step the mysteries of disease have been fathomed and dispelled, and the old, rutty, mechanical professional work has given way to the results of scientific research, based upon the sound principle of reasoning that every effect has its cause, to the elimination of the more ancient methods of practice which were so fraught with speculation, superstition and routine.

Milk poisoning and enteric infections have supplanted the cholera infantum and cholera morbus of our forefathers, and the long list of continued fevers, now known to be due to germ infections of our organisms, have ceased to be regarded as providential visitations, or casual and unexplainable misfortunes.

To us many of the reported procedures of our professional ancestors seem ludicrous, and history and tradition hand down to us many amusing experiences connected with the enforcement of their delusive iron-clad laws. "Feed a cold and starve a fever" was a maxim by them rigidly observed, and an attendant who would so hazard the life of a fever patient as to administer a cup of liquid nourishment or a drink of cold water was instantly chastised or dismissed for his or her manifest indifference or incompetency; and yet when such patients, through their sympathetic pleadings with their bedside attendants, were often stealthily served with the old tin dipper filled to its brim from the family water pail, and very generally presented improved conditions when the old-time doctors

*Read at the 21st Annual Meeting of the New York and New England Association of Railway Surgeons.

made their morning calls, the powers of observation of the attending physicians seem to have been so blinded, and their reasoning abilities so enslaved to the old, fixed, mechanical methods of practice as to utterly prohibit their profiting by experience, and to effectually block every progressive suggestion.

Amusing as these ancient practices may appear to the up-to-date physician, we believe that, with all of the results of our modern research and investigation, many of our present-day methods are as criticisable and as conspicuously in error as the mentioned practices of the antiquated fever physicians.

I aim here to invite attention to what I believe to be a serious misuse of drugs and cold applications in a large majority of those instances where such remedies are directed toward the control of lowering of temperatures in patients—the victims of bacterial diseases.

Infection of the human circulation results in the charging of the blood with bacterial toxins. Under the influence of these toxins, leukocytosis, tissue catabolism and oxidation are augmented. The increase in temperature and the resulting destruction of the invading bacterial elements present, it seems to me, a most beautiful example of Nature's many automatic processes in the direction of defensive action and self-preservation.

Those of my fellow-surgeons who have acquired experience in laboratory work will endorse my statement that the pathogenic micro-organisms propagate and develop active cultures in media reduced in temperature to the freezing-point, and that they propagate the most rapidly in incubator temperature (98.6°, the temperature of the human body); that in a temperature of 100° Fahrenheit *most of the laboratory cultures die, and that in a temperature of* 103° *all artificial germ propagation ceases.*

Is it not so fair and reasonable to assume that what is true of the temperature effects and influences upon the bacteria in the incubator is also true as to the cultures in the human circulation?

Let us consider the general similarity of temperatures in the early stages of the various infectious diseases. In surgical fever, how generally the thermometer indicates a temperature of 103°; in typhoid fever 103° to 104°; in pneumonia, 103° to 104°; diphtheria, 103° to 104°; in acute infectious jaundice, 103° to 104°; in the bubonic plague, 103° to 104°; in variola, 103° to 104°; in yellow fever, 103° to 104°; in malta fever, 103° to 104°; in rheumatic fever, 102° to 104°; in anthrax, 102° to 103°; in varicella, 102° to 103°; in measles, 101° to 103°; in glandular fever, 101° to 103°; in poliomyelitis, 101° to 103°; in typhus fever, 104° to 106°; in scarlet fever, 104° to 105°, and in dengue, 104° to 107°. In dysentery, where the germs are eliminated from the body nearly or quite as rapidly as they propagate and mature, and where a less vigorous conflict is consequently required on the part of Nature, we have a correspondingly less acceleration of temperature, that of 101° to 102°.

It will be noticed that in the diseases caused by the less vigorous varieties of bacteria lower temperatures are the rule, while in Nature's dealings with the more unyielding and tenacious groups the higher temperatures prevail.

I do not wish to be understood as in any way questioning the well-proven theory that the leukocytes constitute Nature's protecting elements in her warfare with bacterial infection, and that in cases of acute infection the standing army is recruited through the process of leukocytosis, for the purpose of more thoroughly opposing the invading elements. But I am convinced that the acceleration of temperature in the early stages of the infectious disease, and its continuation throughout the entire febrile stages, play a part in Nature's defense fully equal in importance to the function of leukocytosis, by preventing, or at least retarding, germ propagation, until the leukocytes have effectually disposed of the intruding infectious elements. I am of the opinion that in many instances the milder infectious attacks are directly controlled by the acceleration of temperature alone, as demonstrated in our cases of surgical septicemia wherein the evidences of infection, including the abnormal temperature, appeared suddenly; and when the required drainage of the seat of infection has been established and further bacterial invasion suspended, how generally prompt have been the favorable reactions on the part of Nature, as shown by the early restoration of the normal conditions, long before general or extensive leukocytosis could possibly have been established.

What percentage of our general practitioners have seriously considered the phenomena of the *chill and the sensations of cold following acute infection,* during which the patient pleads for additional bed covering and warmth, *while the thermometer shows an acceleration of temperature of from two to four degrees?* None will deny that Nature's calls and manifestations are very generally well-timed and trustworthy. The waning stock of nutritious elements of our bodies is attended by Nature's calls for the required food, through the

sensations of hunger; the increased density of the circulatory fluids produces thirst, in proportion to the degree of such density; the discomfort from exposure to cold is but Nature's call for a change of atmospheric temperature or additional clothing protection, and when the body becomes wearied it demands in no less comprehensive language a period of rest and repose.

How subject to general ridicule would be any theory disproving the administration of food to the hungry body, or fluids when thirsty, or warmth when chilled, or rest when wearied! Yet when in infectious diseases Nature's troubles are augmented a thousandfold by a destructive army of invading pathogenic germs, and when her need for aid and relief is manifested by the early chill, at a period when such aid would be of the greatest benefit, how have we, as physicians, responded to those manifestations of distress on the part of Nature? In her preliminary defensive preparations, have we encouraged her in her efforts by aiding her elevation of temperature to a degree destructive to the invading army, or are we guilty of having turned a deaf ear to her pleadings, and by pernicious drug effects, ice bags, cold packs, etc., of discouraging and obstructing her endeavors at self-protection, and denying to her the helping hand when in her greatest need for aid?

I once read of an American pioneer who became engaged in a desperate hand-to-hand struggle with a ferocious bear. During the struggle he frequently called upon Providence to aid him in the seemingly unequal conflict. Not receiving any response to his repeated prayers for aid, he next prayed—"Lord, if you can't help me, please don't help the bear." In the administration of refrigerants and antipyretics in our cases of accelerated temperatures, I feel convinced that we have been guilty of aiding the bear and seriously discouraging the unfortunate pioneer.

In one of the very latest standard medical textbooks on the "Practice of Medicine," which edition bears the copyright date of 1910, we read the following extracts from the author's published methods of treatment in certain infectious diseases:

> "The hydro-therapeutic measures to be commended are the cold bath and sponging. * * * The cold bath is the most preferable. * * * The common practice is to give the patient a bath for fifteen or twenty minutes every three hours, if his temperature reaches or is above 102.5. While in the water the patient's body should be submerged, a cold cloth or an ice bag applied to his head; the exposed neck, shoulders and chest should be douched repeatedly with cold water. * * * Reduction of the temperature of from two to four degrees after the baths is frequent," etc., etc.

The author of the above work is a recognized authority in his specialty, and it is far from my intentions to speak disparagingly of either his professional abilities or his honesty and well-meaning intentions and convictions, as published in the quoted paragraph. When our present-day methods of treatment of high temperatures, and the practice of thwarting Nature in her efforts to destroy, by her elevation of temperature, the invading germ elements of infection, shall have passed into history, I predict that future researchers will view the present-day practices in this respect with as much astonishment as do we the errors of our professional ancestors. We may be assured, however, of most favorable comment by our more enlightened successors upon the extraordinary vitality of the present-day population, as manifested by the large numbers of convalescents from infectious diseases, who had successfully combated not only the ravages of disease but also the best endeavors of their attending physicians.

Let me appeal for earnest consideration of the subject of abnormal temperatures; and after your critical investigations of the field in question, I am sure that your experiences will corroborate those of my own, that the present general use of the ice bags, cold packs, refrigerants, cold baths and antipyretics in infectious diseases is unscientific and dangerous, and should be relegated to the past as the practices of a less enlightened age; and that in your future treatment of this class of cases you will endeavor to facilitate rather than impede Nature's struggling efforts at self-preservation through the substitution of the various present-day means for heat application to the victims of infection, whose emperatures are below Nature's defensive standard (103°), and thus convince yourselves that the abnormal temperature is a saving act of Nature rather than the result of disease.

Blood Cultures in Sinus Thrombosis.

Blood culture in cases of sinus thrombosis is frequently positive, and where it is positive it makes the diagnosis perfectly certain. Negative blood culture, while not excluding sinus thrombosis, would be expected in cases of grain abscess. —E. B. Dench, in *The Therapeutic Gazette*.

NOTES ON LOCAL ANESTHESIA.

E. A. PARKER, M.D.,
BROOKLYN, N. Y.

Schleich's infiltration, Cushing's nerve blocking, and slight additions in technic, have made local anesthesia safe and reliable. Its field has been extended from minor cases to a great variety of major operations. The very young and the highly nervous are usually unfavorable patients for local anesthesia.

In those dreading a general anesthetic, in the aged, in cardiac, diabetic, nephritic, septic and other cases, in whom general anesthesia may be contraindicated, spinal and local anesthesia have their greatest field.

Spinal anesthesia, with its mortality, its dangers of introducing sepsis into the cord and the prospects of later cord lesions, has never appealed to me. Nothing can be done under spinal anesthesia that cannot be done with local alone or combined with a few whiffs of a general anesthetic.

I have performed under local anesthesia the following: removal of cysts, fingers, toes, ingrowing toe-nail; cerebral decompression, thyroidectomy, tracheotomy; excision of ribs and drainage of the pleura; amputation of the breast; for cholelithiasis; gastro-jejunostomy; appendicectomy, intestinal obstruction; drainage of the pancreas; hernia—inguinal, femoral, ventral and umbilical, reducible and strangulated; nephrectomy, suprapubic cystostomy for stone and papilloma; also for drainage of the bladder preliminary to suprapubic prostatectomy with reopening of the bladder in a week or ten days and removal of the prostate—nitrous oxide being given for one and a half or two minutes while the prostate is being enucleated; hydrocele; varicocele; circumcision; hemorrhoids; fistula; perineorrhapy, trachelorrhaphy; external urethrotomy; amputation of the leg and at the shoulder joint.

The technic of local anesthesia may be carried out by any surgeon. To operate successfully requires the confidence of the patient, time, gentleness and thorough infiltration of the tissues. Local anesthesia is effective for three or four hours, but as the area infiltrated is limited, forcible tearing or separation of structures is to be avoided. Cutting should be with gentle stroking of the knife, not pressure. Pain is elicited when inflamed structures are pressed upon by the finger or knife.

A hypodermatic injection of morphine, ¼ grain, is given fifteen minutes before operation. Morphine and cocaine are systemically antagonistic, locally synergistic. The solution, freshly prepared and sterilized for each operation, consists of cocaine one grain, adrenalin chloride, ten minims, sodium chloride 8½ grains, water two ounces—a quantity more than sufficient for any operation. Considering the systemic antagonism of morphine and cocaine, the weakness of the solution employed, less than 1/10 of 1%, and the amount lost upon incising the infiltrated tissues, cocaine poisoning would not be expected. I have not seen a case.

In skull cases the tissues down to and including the periosteum require infiltration, the bone may be trephined, the dura opened and sutured and the brain explored without pain.

In goiter infiltrate thoroughly, and encourage talking when in the region of the recurrent laryngeal nerve. For abdominal operations infiltrate thoroughly to and including the parietal peritoneum. The viscera are lacking in sensation. Dragging on the mesentery causes pain, upon the omentum nausea. When dragging must be done, as in appendicectomy, or lifting up the kidney or gall-bladder, a few whiffs of a general anesthetic are given during the dragging stage and the operation is completed under local anesthesia.

In hernia the nerves are blocked. When the testicle requires much handling, infiltrate the genital branch of the genito-crural. Hours may be spent in giving the strangulated viscus a chance to have its circulation restored.

In amputations of a limb infiltrate the tissues layer by layer as the incision is made, block the nerves and periosteum. The bone has no sensation. Blocking of the nerves prevents pain and shock. A tourniquet is not required, blood vessels are clamped and cut when seen, clots or deposits may be cleared out of the vessels in gangrenous cases before applying ligatures.

262 MCDONOUGH STREET.

DIAGNOSIS OF RUPTURE OF THE SPLEEN.

It is not always possible to differentiate between rupture of the spleen and rupture of the kidney. The pressure resulting from the accumulation of blood from a ruptured spleen may cause uninary symptoms closely resembling those found in dupture of the kidney.

In rupture of the kidney it has been noted in several cases that on careful rectal examination there could be distinctly felt an elevation of the posterior parietal peritoneum of the left side, due to the hematoma, which symptom is absent in splenic hemorrhage.—McCOY, in the *Journal of the Medical Society of New Jersey.*

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, OCTOBER, 1912.

POST-NARCOSIS PARALYSES.

The lesson of post-narcosis paralysis, usually of one arm, rarely of both arms, sometimes of one or both legs, has been learned by uncomfortable experience, and in well-regulated operating-rooms one nowadays is not apt to see an instance of this wholly preventable and distressing accident. It does occur, however, here and there, as a result of insufficient watchfulness on the part of the anesthetist or because the operator has insisted on a vicious position of the arm or because of a faulty application of a leg-holding apparatus.

Mally (*Revue de Chirurgie*, 1899, p. 93), followed by other writers, divided post-anesthesia paralyses into four groups: (a) central (apoplectic); (b) peripheral; (c) hysterical; (d) reflex. It is with the second of these groups that we are here concerned. Peripheral post-narsosis paralysis is always traumatic. When musculo-spiral palsy develops in an arm that has been allowed to hang over the edge of a table, or brachial palsy is found on the side on which the strap of a leg holder has been allowed to press on the neck, the traumatic element is readily traced. To account for brachial paralysis from prolonged superabduction of the arm (alongside the head) various explanations have been offered, viz., compression of the brachial plexus between the clavicle and the transverse processes of the sixth and seventh cervical vertebrae (Bernhardt, Braun, Krumm, Hoedemaker, Nonne); compression of the plexus between the clavicle and the first rib (Büdinger, Kron, Krumm, Sehrwald); pressure by rotation of the clavicle on its long axis (Gaupp); pressure of the plexus against the scalenus medius (Kron); pressure of the head of the humerus against the nerve trunks (Braun, Kron, Bardenheuer); stretching of the nerve roots (Duval and Guillain). However doubtful the exact cause of brachial palsy by prolonged superabduction of an arm, there is no doubt that the practise of drawing the arms above the head, during an operation, should never be indulged in. For most operations the arms should be alongside of the body, or folded across the chest. If abduction of an arm is needed, as in breast amputation, care must be taken that hyperabduction is not inadvertently permitted. The prevention of narcosis paralysis is the duty of the anesthetist. He must see to it that an arm is not allowed to hang over the table, or to be hyperabducted for more than a short time. If the patient is in the lateral prone position, as in kidney operations, the nether arm should be drawn forward and the anesthetist should shift its position from time to time (a wise precaution in any long operation, no matter what the position of the arms). He should see that rotation and superextension of the head is not indulged in continuously. If shoulder supports are used in the Trendelenburg position (it is far better to hold the body by bandaging the legs to the table), they should rest over the outer aspect of the shoulder; the shoulder strap of a leg-holding harness should be similarly placed, or padded thoroughly with towels and—as an extra precaution—the anesthetist should lift it from time to time from the body. And the operator himself should see to it that no harness or other apparatus exercises undue or prolonged pressure on the lower extremities. That these post-narcosis paralysis usually recover completely in a few months is small comfort in their even occasional occurrence. Their best treatment is prophylactic.—W. M. B.

IODINE STERILIZATION OF THE SKIN.

In the four years that have elapsed since Grossich introduced simple iodine painting of the skin as a routine means of sterilizing the field of operation ample testimony has appeared concerning the method, and this testimony has been fairly in agreement on its value. Bacteriologically and histologically iodine painting is superior as a skin disin-

fectant to "scrubbing up." Clinically it has been found to be at least as reliable. The advantages of the iodine method in simplicity and time-saving are obvious.

It seems to make little difference whether one uses the officinal U. S. P. tincture (7%) or half that strength. The only precaution, so far as concerns sterilization, is that the skin should be free from moisture when the iodine is applied. Washing of the parts, if done at all, should therefore be several hours before operation, and shaving is attended to at the same time or done "dry" on the table. Before painting the skin moisture is removed with benzine, alcohol or ether.

Only two serious objections, we believe, have been raised against the iodine method. Propping expressed the belief that it was responsible for post-operative intestinal adhesions, by contact of the gut with the skin and with iodine stained towels. His contention has found no general support, but his point is well taken, and care should be exercised to protect by ample pads and towels exposed coils of intestine from contact with the iodized skin.

The second objection concerns the production of iodine dermatitis to which a few subjects seem to show an abnormal susceptibility. The occurrence of this sequela can be obviated in most cases by using the iodine only once and in a single coat, and by washing off the skin, after the operation, with alcohol.

There are some conditions and situations in which, it seems to us, iodine skin sterilization is inadvisable; in cases of hyperthyroidism; in individuals with sensitive skin; on the face; on the genitals. Further experience may teach us that it is wiser not to use it when much intestinal exposure is anticipated, and that when the skin is quite wet from perspiration, preliminary bathing with benzine or ether is insufficient as a drying method to prepare the way for penetration of the iodine.—W. M. B.

CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA.

The educational habit of many surgeons to visit among their colleagues at work has been crystallized, so to speak, in an elastic organization, the Clinical Congress of Surgeons of North America, which held its first meeting in Chicago in 1910. At the second annual meeting in Philadelphia, 1911, over 1,000 surgeons registered. This year the congress will gather in New York City, November 11-16, and a registration of over 2,000 is expected.

Morning and afternoon operative clinics in general surgery and in the surgical specialties, have been scheduled in most of the hospitals of the Greater City of New York, and there will also be demonstrations in radiology, surgical pathology, etc. The evenings will be devoted to meetings at which papers will be read, and in which several European visitors will participate. Membership is open to any physician upon registration at headquarters, the Waldorf-Astoria Hotel, during the session.

New York City has a larger fund of clinical material to draw upon than any other city in America; there will be clinics numerous enough and varied enough to interest all the visitors. On the other hand, practically the entire surgical fraternity of New York will be engaged as hosts and teachers in this congress; the responsibility will be theirs and then to show where the metropolis of the United States ranks among the centers of surgical activity and progress.

Surgical Suggestions

Splinters of hard wood, like pieces of glass, may become encysted in the tissues, and can often be drawn out whole by one end. But soft wood, and especially old wood, breaks on traction, and unless the wound is made large enough to expose it all, even very large fragments may be left, unrecognized, in the tissues.

In removing a foreign body from a joint none but an uncontaminated gloved finger should be permitted in the wound, and that no more than is necessary.

Ichthyol is helpful in the treatment of chronic non-suppurating paronychia. The underlying cause of the affection must be sought—syphilis, eczema, or favus of the nail, the use of caustic alkalies on the hand, etc.

Hemolysis tests are desirable before selecting a donor for transfusion, but if the case is of great emergency this may be dispensed with, since hemolysis is unlikely if the donor is free from malignant growth and tuberculosis. Syphilitic taint must of course be excluded.

Surgical Sociology

Ira S. Wile, M.D.
Department Editor

To secure industrial hygiene co-operation is essential. The employer, the employe and the public must all appreciate the necessity of considering the prevention of accidents a matter of concern to all.

Willingness of an employer to reimburse the employe for time lost through industrial accidents does not remove his responsibility for the accident itself. The employer's liability decreases with the amount of time, attention and money he has expended upon protective devices for his employes. All belts, gears, saws and sharp tools must be guarded. Lighting must be adequate for the labor to be performed by a worker of normal vision. There must be no crowding, but ample room for free muscular action on the part of the industrial workers. While this appears to be protecting the employe, it is manifest that the employer is equally protected against loss of time, money, or machinery and the great wastage that comes through litigation.

The employe suffers personally for whatever occurs to him. His family shares the burden. The recompense of wages does not atone for the loss of an eye or a limb. His responsibilities require him to follow all instructions given for his protection. Signs of precaution must be studiously observed. His physical health is essential for the safe performance of his duties. Attention to eyes and ears is important for those employed in the midst of machinery.

Life insurance companies are interested in promoting the general welfare of the community. They have come to realize that money expended for the development of protective measures has a distinct commercial advantage to insurance companies. Casualty companies are anxious and willing to assist in lowering the accident rate. The public as a whole, which pays the bills arising from dependence either through hospital service, dispensary service, or general relief, sees the necessity of lessening the accident rate. The general value of lessening illness and accident is more striking by virtue of preventability of industrial accidents.

While the prevention of disease through hygienic procedures is the field of sanitary medicine, the particular phase of hygiene in which surgeons would have power is the field of accident prevention. Laws have already been enacted in eight states requiring the registration of industrial poisonings. The field of usefulness of surgeons may be widened by a careful collection of the statistics relating to accidents and by establishing a central clearing house to which reports might be made.

At the present time many state departments of labor require railroads, factories and similar organizations, where many men are employed, to make a formal report of every accident that may occur.

Surgeons are not required to give their evidence as to the prevailing types of accidents which they made in private or hospital practice. The surgeons possess the expert knowledge which is essential for a campaign of education. At the present time the general surgical information is diffused through a large body of men and is not available for securing far-reaching legislation. It would seem a progressive step for the surgical associations to collect and systematize the facts regarding industrial accidents. By thus doing, a distinct advance could be made by calling attention to the particular types of accidents that are most likely to occur in definite industries. It would enable the profession to assist in limiting such accidents, the existence of which is not appreciated at the present time.

The mere tabulation of accidents as they occur at the present time does not give all the information that should be available for those interested in industrial hygiene or social legislation. But a moment would be required to add the nature of the work being done at the time the accident occurred. This refers, of course, to real accidents as well as those of a chronic nature, such as result from the use of mercury, lead, phosphorus and similar industrial poisons.

Physicians have taken their place in the new work of health conservation, surgeons now have the opportunity of becoming an important factor in conserving industrial workers from the accidents to which they are susceptible by virtue of their own carelessness, the employer's indifference, or the direct hazards of industries.

The recognition of America by foreign institutions has been tardy. The mutual interchange of courtesies by European nations and this country has usually been through the medium of the diplomatic service. The profession of medicine abroad is thoroughly in accord with the methods and practices of American traditions. Progress in preventive medicine has advanced in Europe to a higher plane than similar work in this country. At the present time a wave of effort is pervading the United States, rushing onward to overwhelm those accidents which are prejudicial to the life and limb of industrial workers. As an indication of the recognition of these efforts in the United States, a new honor has been bestowed upon the nation.

The Allegemeine Electricitaets Gesellschaft (A. E. G.), of Berlin, has cabled President Arthur Williams, of the American Museum of Safety, that the Rathenau gold medal has been placed at the disposal of the museum for award, annually, for the best device or process for safeguarding life and limb, or promoting health in the electrical industry. The competition is open to every country in the world, the only condition being that the device or process must be exhibited at the American Museum of Safety in New York City. This is the first time that the bestowal of a high European honor has been given to an American institution and it indicates the standing of the American Safety Museum among European scientists.

The Rathenau medal is well known in the European scientific world. It was presented to Dr.

Emil Rathenau, president and founder of the Allegemeine Electricitaets Gesellschaft, the greatest European electric company, on the occasion of his 70th birthday, with the felicitations of the Kaiser for his services in the field of electro-technics (he was the man who introduced incandescent lighting into Germany). One medal will now be cast each year from the original die for the American Museum of Safety to award.

It is hoped that this competition will benefit humanity and in so doing will reflect upon the original donor of the medal, the organization that has been charged with its safekeeping, and the American nation to whom it has been presented in recognition of the efforts of the American Museum of Safety.

Book Reviews

Biology and Its Makers. By WILLIAM A. LACY, Ph.D., Sc.D., Professor in Northwestern University. Octavo; 469 pages, with portraits and other illustrations. *Second edition;* revised. New York: HENRY HOLT & Co.

The average physician does not appreciate how greatly the science of medicine has depended upon pure biological research for its progress, until a work such as this is placed before him. At the same time it is gratifying to note that biology owes much of its advance to the work of physicians. The volume teems with names of men whom the medical world has always honored as its own. In a large measure the history of biology is a history of the non-clinical aspect of medicine.

The work opens with a general outline of the rise of biology, from Aristotle, through Harvey to the development of the cell theory. A chapter is devoted to Vesalius and the foundation of scientific anatomy. The author then proceeds to Harvey and the history of the discovery of the Circulation. An interesting chapter on the discovery of the microscope and the observations of the early microscopists, Swammerdam, Malpighi and von Leeuwenhoek, is followed by one on the progress of minute anatomy. A separate chapter is devoted to Linnilus. The use of comparative anatomy is traced from Cuvier to John Hunter, Owen and their successors. The founder of modern histology, Bichot and his successors, Källiker, Schmann, Schultze, Virchow, Ramon y Cajal, are given considerable notice. The author next proceeds to the rise of physiology as developed by Harvey, Haller, Johannes Müller, Bell, Claude Bernard, Du Bois Raymond, etc. A separate chapter is devoted to the founders and the use of embryology. Most interesting is the story of the foundation of the cell theory. Physicians will also be especially interested in the chapter on Pasteur and Koch. No better summary of the work of these great pioneers could be desired.

Lacy then takes up the theories of heredity and germinal continuity as exemplified by the labors of Mendel, Galton and Weissmann. The first part of the book concludes with a history of the rise of paleontology. The second and shorter part of the work comprises five chapters on the history of the doctrine of evolution. To those who wish a clear idea of the many aspects of this much misunderstood doctrine, we recommend these chapters.

An attractive and valuable feature of this book is the manner in which biography is mixed with the history of biological thought. In this way, the author has kept the human interest parallel with the scientific. The biographies are well told. They are not merely catalogues of dates and events, but are frequently characterizations and afford a mental picture of the man and his works. The book would possess value for its illustrations alone. The portraits of many of the founders of biology and medicine are not frequently seen, and Lacy has evidently taken pains and labor to procure some of these portraits.

Every physician who cares in any way for the history of his art and science should own this book. We assure him of many pleasant and interesting hours in its perusal.

A Text Book of Gynecology. By WILLIAM SISSON GARDNER, M.D., Professor of Gynecology, College of Physicians and Surgeons, Baltimore. Octavo; 286 pages; 138 illustrations. New York and London: D. APPLETON & Co., 1912.

This book is especially written to meet the demands of the "overcrowded medical student." The text is comprehensive enough to acquaint the student with the subject-matter generally embraced in a textbook of gynecology, and indeed will undoubtedly satisfy the eagerness of the average medical student in that it will help him to pass the college examinations. Furthermore the book is so clearly and tersely written that very little time will be lost in its perusal. There is, however, one feature which is lacking in this as well as in a great many similar text-books which deserves special mention. It is to be regretted that medical facts should be served out to students in a "cut and dried" fashion and that these should be regarded chiefly from the view-point of his "stock-in-trade." It would seem that not sufficient stress is laid upon the defects in medicine, the gaps in our scientific understanding of the subject-matter and that not sufficient time is given to point out what is well established by experiment and usage and what still is based upon empiricism and hearsay. If there is one thing a student ought to take away with him from the lecture hall, it is the stimulus to perfect on medical knowledge and the resolve to fill in the lacuna which should be pointed out by the teacher.

Tuberculin Treatment. By CLIVE RIVIERE, M.D., F.R.C.P., Physician, East London Hospital for Children, Shadwell, etc., and EGBERT MARLAND, M.D., B.Sc. (London), M.D., Berne, of Arosa, Switzerland, Visiting Physician to the English Sanatorium (Villa Gentiana). Duodecimo; 277 pages. London: OXFORD UNIVERSITY PRESS, 1912.

Tuberculin therapy has never been broadly accepted by the profession. This has been due, partly to the discrepancy in results and dosage, as reported by most investigators; to the great number of tuberculins, and perhaps to the reactionary effects of the disasters of the early tuberculin theory.

Convinced by a wide experience of the value of tuberculin therapy, the author's attempt in this book to set these prejudices aside and to place tuberculin therapy upon a sound scientific footing. They discuss the general principles of tuberculin administration; the manufacture of tuberculins, dosage, methods of immunization, with tolerance (Koch) and without tolerance (Wright).

An eminently practical and well-timed book.

Pathology of the Eye. By E. H. ADAMS, M.A., M.B., D.O. (Oxon), F.R.C.S., Surgeon of the Oxford Eye Hospital; Consulting Ophthalmic Surgeon of the Radcliffe Infirmary. Duodecimo; 194 pages; illustrated. London: OXFORD UNIVERSITY PRESS, 1912.

The work is written in a didactic form and is especially applicable to students who are about to take an examination. The exposition is nicely systematized, direct and succinct. It is not exhaustive, nor in fact is it intended to be. The work furnishes merely a general outline of the pathology of the eye, and will serve readily as an excellent basis for future study. References to the literature are few and scattered. The illustrations are excellent.

Progress in Surgery

A Résumé of Recent Literature.

Diseases of the Fallopian Tubes. H. J. Boldt, New York. *Journal American Medical Association,* July 13, 1912.

Boldt discusses the infections of the fallopian tubes and their consequences. Gonorrheal salpingitis can be credited with most tubal pregnancies, and it may also be the cause of menstrual disorders, most commonly menorrhagia, as exacerbations are apt to occur about the monthly period. There is no characteristic pain of tubal inflammation, but it may occur in various ways. Backache is a prominent symptom, usually accompanied by pain in the lower abdomen. Neurasthenia is not a rare occurrence. In case a rupture of a distended tube takes place intraperitoneally the symptoms vary according to the virulence of the tubal contents. The accident is a serious one, and when, in a known case of pyosalpinx, sudden collapse occurs, surgical intervention is called for. The diagnosis of these cases calls for palpation, and this can only be done by the bimanual method. The position of an inflamed fallopian tube may be abnormal and simulate, even uterine tumor. To make a diagnosis of tuberculous salpingitis, other evidence of tuberculous infection is necessary, and Boldt does not consider it possible in the early stages. It is not always easy to recognize the contents of the tube by palpation. The doughy sensation of pyosalpinx to the examining finger contrasted with the elastic feeling of the hydrosalpinx is the most reliable symptom in differentiating the two. Hematosalpinx, not due to tubal gestation or genital atresias, cannot be diagnosed with certainty except by puncture, which is not desirable. A tubal gestation, if uninterrupted, is best indicated by the other changes attending pregnancy, but some cases may be very puzzling, as are one or two reported. The prognosis of tubal disease, except in malignant cases, is generally good as far as life is concerned. The restoration to health, however, depends on circumstances. Boldt believes the majority of acute gonorrheal cases will recover if properly treated and subsequent infection prevented. If the fimbriated extremities have been closed and the tubes have become more distended, the prognosis of a cure from a pathologic point of view is out of the question. The acute gonorrheal conditions during the puerperal state have a serious aspect, but if one keeps his head and uses proper treatment, most such cases recover. The main principle of treatment is complete avoidance of sexual emotions and excitement with physical rest and hygiene, and surgical operations should not be too hastily employed in the first attacks. Local treatment with hot douches, ichthyol, etc., are also useful. In case of surgical intervention, Boldt advises a large incision and vaginal section. For abdominal operations he prefers the longitudinal incision. Every factor should be carefully weighed before surgical measures are employed, and radical operations be avoided in acute pelvic peritonitis from tubal inflammation. The curet should not be used in gonorrheal cases.

Hysterotomy. John B. Deaver, Philadelphia. *Journal American Medical Association,* July 13, 1912.

Deaver says that his experience with the few cases he has operated on has been so satisfactory as to warrant bringing this operation up for consideration, in the belief that it should be kept in mind and employed in certain selected cases more often than is now the case. He wishes especially to urge that placenta prævia must be considered an indication for hysterotomy which is to be given the preference over any other method of delivery. In the toxemias of pregnancy in their later and more severe stages it is to be seriously considered as a rival of less radical measures. In certain myomatous uteri and in the presence of pedunculated intra-uterine growths or endometrial changes, we may on occasion find it of great help in relieving our patients most expeditiously of their symptoms. The chief contra-indication is the presence of intra-uterine infection, either demonstrated or strongly suspected. He would not at the present time open a uterus in the interior of which he feared to find infection. If this precaution is observed the operation is one of extreme simplicity and low mortality, but should be undertaken only by an experienced surgeon who is a master of intra-abdominal technic.

A Prostatic Study. G. Kolischer, Chicago. *Journal American Medical Association,* July 6, 1912.

Kolischer, after referring to the work of Zuckerkandl and Tandler on the anatomy of the prostate gland, says that considering that the hypertrophied part of the prostate is always that which is closest to the bladder, it is obvious that the suprapubic method ought to be the one chosen. The fact that the "surgical capsule" is composed of compressed and atrophied glandular tissue furnishes, he says, a point as to the way access should be gained to the tumor to be enucleated. It emphasizes even more the rule that the covering of the prostate, the vesical mucosa, and the "surgical capsule" should not be perforated by boring with the finger but by incision with the knife. He is convinced that operating in the dark has something to do with post-operative hemorrhage. The operator deprives himself of the opportunity of seeing and attending to the small spurting arteries. The digging out of the prostate in the dark, with a good deal of force as a rule, may be a source of still more dangerous hemorrhage. The forcible pulling inside the bladder may lead to the detaching of the anterior part of the viscus from its connections and to the rupturing of the big vein located thereabouts. The preservation of the verumontanum and of the ejaculatory ducts which he claims in his operation can be proven clinically and by ocular evidence. Some patients experience marked increase of sexual power and he has at his disposal seven urethroscopic findings after suprapubic enucleation where the verumontanum and the openings of the ducts could be seen through the urethroscope.

Surgery of Chronic Infections of the Lungs. S. Robinson, Boston. *Journal American Medical Association,* July 27, 1912.

After noticing recent progress in the surgical treatment of lung disorders, Robinson takes up the subject of surgical treatment of chronic lung affections no longer amenable to medical treatment. More patients are succumbing to such diseases than is generally admitted, though they are more or less amenable to surgical treatment. The conservatism of the past has perhaps been erroneous, though experimental and clinical evidence still points to a rational value of the surgical treatment of tuberculosis, bronchiectasis and chronic abscess of the lung. In the two latter lung resection is obviously the ideal to be obtained, and animal experimentation has shown the way, though the attempts to perform the more radical operations have not been very successful. He suggests preliminary operations to produce collapse and shrinkage before attempting the ultimate incision. The value of compression treatment is emphasized as the only surgical treatment of pulmonary tuberculosis and he advocates the Murphy method of nitrogen injection of the pleural cavity. He says the relief it furnishes alone justifies the treatment, but many cures are on record. Any extensive rib resection to produce compression, which can be as well done by nitrogen gas injection, is eminently unsound. The one hope, he believes, in attacking bronchiectasis is by a preliminary compression followed by excision. Another interesting method of producing lung compression has been shown experimentally by Sauerbruch and Bruns in which the pulmonary arterial branch of the lower lobe of one lung was ligated. Robinson has repeated the experiments and thinks there are reasons for including this among our methods of lung compression, but he does not think it will be better than an artificial pneumothorax, which may serve as a useful preliminary for lobar incision in bronchiectasis. "In multiple chronic non-bronchiectatic abscess we meet a stubborn foe. The attack should be piecemeal and not too radical; repeated but cautious attempts to drain the

peripheral cavities under local anesthesia, incident and subsequent to limited rib excision; separating of adhesions from time to time to favor shrinkage and organization of the remaining lung tissue, and finally, excision." He urges in conclusion that one should consider the propriety of always doing a suitable compression operation in these disorders before starting a radical one-stage excision of one part of the lung.

The X-ray Diagnosis of Intraabdominal Neoplasms by Means of the Displacement of the Large Intestine. (*Die Röntgendiagnose intraabdominaler Neubildungen aus der Verlagerung des Dickdarms.*) EDOUARD STIERLIN, Basle. *Deutsch Medizinische Wochenschrift*, August 1, 1912.

Stierlin advocates studying abdominal tumors by means of the *x*-ray after having filled the colon with bismuth (per os or per rectum). He believes that tumors of various organs and regions have characteritic influence on the colon, displacing it in definite directions, so that the location of the tumor is possible. His article is illustrated with a number of interesting diagrams. He draws the following conclusions: The diagnosis of intraabdominal tumors (new growths and abscesses) can be definitely located by means of displacements they cause in the large gut, as shown by means of the *x*-ray. Psoas and iliacus abscesses appear to cause a characteristic displacement of the ascending colon toward the mid-line. In right-sided pelvic tumors the cecum is lifted upward and toward the mid-line. The typical mesial displacement of the co'on in tumors of the kidney is shown much more clearly by this method than by the customary method of colonic inflation.

The Value of Enterostomy in Ileus. L. H. TAYLOR, Washington, D. C. *Monthly Cyclopedia and Medical Bulletin*, July, 1912.

Noting that the early spontaneous formation of a fecal fistula frequently exercised a very favorable influence on cases of peritonitis of appendiceal origin, Taylor employed interostomy in severe cases of ileus with very good results. In these cases the indications are diminishing peristalsis and a change in the character of the vomitus. The degree of peristalsis he believes can be observed by auscultating with the stethoscope. When the vomitus loses its sour gastric odor and begins to become brownish enterostomy is advisable. Under local anaesthesia or a very light narcosis the loop of gut near the lower end of the ileum is brought to the surface and an opening made in it through which a drainage tube is introduced. In appropriate cases in which the abdominal muscles have not been stretched beyond their limit of tonicity and in which the intestines still possess some power, the relief is immediate.

The author, from a study of 20 cases, concludes as follows:

1. Enterostomy offers an excellent chance to a class of ileus cases formerly always fatal.
2. It should be performed before intestinal paralysis is complete and before the abdominal muscles are stretched beyond their limit of tonicity.
3. The lower ileum should be the region of election for the operation, and a tube of not less than 5-16 inch inside diameter used for drainage.
4. The opening should not be made in the colon.
5. Old people, fat people, and people whose abdominal muscles are weakened from any cause offer an unfavorable prognosis.

The Indications for and the Prophylaxis of Surgical Procedures in Diabetics. (*Die Indication und Prophylaxe chirurgischer Eingriffe bei Diabetikern.*) PROF. UMBER. *Deutsche Medizinische Wochenschrift*, July 25, 1912.

Umber emphasizes the fact that the internists have hesitated too much in subjecting their diabetic patients to necessary operations. He believes that with proper dietetic preparation almost any except the very severest types of the disease are able to stand operation. He agrees with v. Noorden that the indications for surgical procedures in diabetics are not more limited than in non-diabetics. Wherever possible the patient should be made sugar-free before operation, or if operation is at once necessary, the post-operative diet should be such as to quickly render him free from sugar.

The author in his consideration of diabetic gangrene, states that in his belief this is due entirely to vascular sclerosis and that its treatment is that of arteriosclerotic gangrene. It is true that with the advent of grangrene, the diabitic process becomes aggravated, and frequently there is a distinct improvement in the glycosuria and the acidosis on the removal of the gangrenous focus. In diabetic furunculosis, incision should be avoided, and wet-dressings and Bier's hyperemia should be used.

Even in very severe diabetes, accompanied by acidosis, surgery is not contra indicated, if the glycosuria and acidosis are at the same time vigorously combatted from a medical standpoint. Among other medical measures the author recommends the exhibition of 0.1 Ext. Opii g. d. for several days. He advises local anaesthesia wherever possible, and when necessary general anaesthesia with ether, avoiding chloroform as far as possible.

Some Unusual Cases of Narrowing of the Esophagus in Childhood. JOHN LOVETT MORSE, Boston. *Archives of Pediatrics*, July, 1912.

Morse reports three very unusual cases of congenital stenosis of the esophagus which have come under his observation during the past year. The symptomatology of the cases was very similar and consisted in the following: When fed, the baby choked and the mouth and throat seemed full of mucus. The child sucked and swallowed well, but after a few minutes strangled and the feeding came up again. The stool consisted entirely of meconium. A catheter passed into the esophagus was arrested about 10 cm. from the gums and could be passed no further. The children lost weight rapidly and died. An autopsy obtained in one of the cases showed the lumen of the esophagus to end sharply about one-third of the distance from the epiglottis. From here downward a narrow band replaced the esophagus to just above the cardia where it reappeared.

The author reports several other interesting cases in older babies, one a cardiospasm, the other a narrowing of the esophagus well shown by bismuth *x*-ray pictures.

Urethral Calculi. JOHN SPEESE, Philadelphia. *Archives of Pediatrics*. July, 1912.

Urethral calculi are either formed in the urethra or are formed in the kidney or bladder and passing downward become lodged in the urethra. As a rule they are soft, being composed of phosphatis. They may give rise to pain, to frequency to hemoturia, and frequently to retention of urine. They are relatively more frequent in children for the reason that the rudimentary character of the prostate gland permits stones to pass easily from the bladder into the urethra. The irritation produced by the stone may cause a discharge resembling a specific urethritis. The author reports three cases, two of them in young children, in whom the stones causing retention were removed with ease by way of the meatus.

Variations in the Clinical Picture of Gastric Ulcer. WILLIAM FITCH CHENEY, San Francisco, *Interstate Medical Journal*, August, 1912.

After giving in detail nine case reports and discussing them, the author draws the following conclusions as to the diagnosis of gastric ulcer:

(1) There is no absolutely certain clinical history of ulcer: for the symptoms vary widely in different cases and at different times in the same case.

(2) Nocturnal pain, arousing from sleep, does not always mean duodenal ulcer, as so great an authority as Moynihan would have us believe; for, as proved by the cases reported, it may occur as well when the ulcer is gastric and far from the pylorus.

(3) Hematemesis may never occur in the course of a chronic gastric ulcer, and its absence from the history is no bar to the diagnosis.

(4) Vomiting of any kind may never take place throughout the entire course of the ulcer history.

(5) Pain is the one symptom that most unfailingly presents itself at some time and is the most constant complaint in most cases; but this pain varies greatly in severity in different cases and at different times; also as regards the site at which it is felt and the time after eating at which it occurs.

(6) It is always important, in estimating the meaning of a gastric history resembling that of ulcer, to remember the possibility of reflex, gastric symptoms from chronic appendicitis, or chronic cholecystitis, or intestinal parasites such as tapeworm, as well as the gastric crises of locomotor ataxia.

Appendicitis in Childhood. RUSSELL S. FOWLER, Brooklyn, *American Journal of Diseases of Children*, August, 1912.

This report is founded on the last 100 consecutive personal operations for acute appendicitis in patients under 12 years of age. The mortality at operation was 3 per cent.; the disease mortality was 4 per cent. The patients varied in age from 2¾ years to 12 years, and twice as many males as females were affected. In 70 cases in which the blood was examined a leukocytosis varying from 8,200 to 48,200 was found. Under diagnosis the author shows that appendicitis is becoming better recognized as a surgical condition in childhood. From 1887-1897, at the Methodist Episcopal Hospital of Brooklyn, there were treated 340 patients with appendicitis, of whom but twelve were under the age of 10 years—in other words, 3 9-17per cent. were in children. To compare with this are the figures from the German Hospital of Brooklyn from the years 1900-1912. During this time there were 1,115 appendix cases, of whom 92 were under 10 years of age—over 8 per cent. This speaks well for the progress made by the general practitioner in diagnosis. Fowler calls attention to the extreme importance of rectal examination in making a diagnosis. "Rectal examination is particularly valuable in children for the examining finger reaches much further than is the case in an adult. Its routine employment would lead to earlier diagnosis in a considerable proportion of cases, while in some cases in which the appendix lies in the true pelvis it is only per rectum that the enlarged appendix or abscess can be felt."

Benign Epithelioma. M. L. HEIDINGSFELD, Cincinnati. *Journal American Medical Association*, July 27, 1912.

Heidingsfeld questions the commonly held opinion that skin diseases afford special advantages for the supply of morphologic changes incident to malignancy. No malignant tumor of the skin can attain sufficient size to permit macroscopic recognition and at the same time demonstrate its genesis and origin from some definite follicle, gland or epidermal structure. There is, however, a certain class of skin tumors, the so-called multiple benignant systic epitheliomas, which present some unusual features for the study of the genesis after it is well established. Five cases of this type are discussed as regards their morphology. He has also included in his consideration a case of morphea-like epithelioma and a case of carcinoma epitheliale cicatrisans on account of certain features they afford for comparative study. The conclusion that he reaches is that the genesis and fundamental origin of all forms of epithelioma must, in the light of our present knowledge, remain a more or less unsettled question. While it is clinically true that moles, etc., sometimes take on malignancy the vast majority show no such etiology. If malignancy starts from hair follicles, sweat glands and other performed cellular structures, cases should be more frequent than are currently reported.

The Operative Treatment of Spina Bifida, with Report of a Case. L. G. PAUL, Boston. *Boston Medical and Surgical Journal*, July 4, 1912.

1. Do not operate if the patient is mentally defective, or if marked paralysis exists.

2. Do not operate on very young babies unless rupture has occurred, or is imminent.

3. Raise the foot of the operating table so that the patient's head will be low, and intracranial pressure maintained.

4. See that the sac is free from nerve elements before ligating the pedicle.

5. A small temporary drain, down to the lumbar fascia, is advisable.

On Specific Antibodies in Echinococcus Patients. (*Ueber Spezifische Antikörper bei Echinokokkenkranken*). O. THOMSEN and G. MAGNUSSEN, *Berliner Klinische Wochenschrift*, June 17, 1912.

The authors tested the serum of 12 patients according to the complement fixation reaction, using hydatid fluid as the antigen. Of these 12 cases, 10 were positive.

On the Early Application of Enteroanastomosis Above to the Hernia Canal in the Treatment of Gangrenous Hernia. (*Ueber die frühzeitige Anwendung der enteroanastomase vor dem Bruchkanal zur Behandlung der Gangränösen Hernien*). H. NOGUCHI, Fukuoka. *Berliner Klinische Wochenschrift*, July 8, 1912.

In one case of strangulated gangrenous hernia, Noguchi first made an enteroanastomosis between the two entering loops of small testine close to the hernia ring. He then resected the gangrenous loop with purse-string sutures. Uneventful recovery. Noguchi advocates this method instead of the formidable operations of primary resection or formation of an artificial anus. He believes that the resection of the gangrenous gut may be left for a scondary operation.

Injection of Salt Solution. (*Injektion mit Salzlösung*). D. SCHOUTE, Middleburg, Holland. *Zentralblatt für Chirurgie*, July 6, 1912.

Schoute advocates that salt solution for therapeutic purposes be injected into the prevesical space. This space is roomy, the connective tissue is loose and can easily hold one liter of solution. The needle is inserted just above the symphysis pubis. In a large experience, puncture of the bladder has not occurred. The author uses a fairly large needle and he states that one is able to inject a liter of solution in eight to nine minutes.

Supraclavicular Anesthetization of the Brachial Plexus. (*Die Supraclaviculäre Anästhesierung des Plexus Brachialis*). E. BORCHERS, Altona. *Zentralblatt für Chirurgie*, June 29, 1912.

On the basis of 35 experiences, Borchers warmly advocates this method devised by Kulenkampf. Briefly, the technic is the following: The subclavian artery is palpated and the point determined where this artery descends below the upper border of the clavicle. The syringe, filled with 3 per cent. cocaine solution, is then directed from this point backward in the direction of the transverse processes of the second and third dorsal vertebræ until the patient feels tingling in the tips of his fingers. About 10 c.cm. (in children 5 c.cm.) are then injected. In about ten minutes the arm is completely anesthetic. The anesthesia last one and a half to two hours and is not followed by any consequences. There is no danger of puncturing the subclavian artery. The anesthesia was successful in every instance.

The Operative Treatment of the Edema of Elephantiasis. (*Die operative Behandlung der elephantiastichen Odeme.*) E. KONDOLEON, Athens. *Zentralblatt für Chirurgie*, July 27, 1912.

Kondoleon tried the well known methods of Lanz and Handley without avail. Furthermore he demonstrated to his satisfaction that these methods were not effective, because he found in all his cases a very thick fascia which prevented the lymph communication between the muscles and the subcutaneous tissue. He therefore attempted to restore this continuity by removal of large areas of fascia. This is done by making long and broad incisions and removing an area of fascia corresponding. In six cases the operation was attended by pronounced success.

Physiologic Basis of Thoracic Surgery. J. M. FLINT, New Haven. *Journal American Medical Association*, September 7, 1912.

Flint reports the result of a series of experiments to determine the value of anesthesia methods in thoracic surgery. They consisted in performing a series of typical thoracic operations on animals connected with a kymograph, simultaneously recording the respiration and blood-pressure in order to determine what reactions the medullary centers would yield to various operative procedures. The apparatus used was an improved form of that previously described by him and which could be used for insufflation, pharyngeal anesthesia or positive pressure differential at will by simply varying its terminal connections. The comparison of these methods was therefore possible as they could be quickly changed from one to another. As a rule, however, the experiments were completed from beginning to end under insufflation or pressure differential. Perhaps the most marked feature in these experiments, which included all or nearly all of the operative manipulations of the thoracic organs, is the showing how little of what we are used to calling surgical shock seems to follow operative traumatism to the contents of the thorax. The reactions of the medullary centers to operative traumatism, as shown in these experiments, suggest caution in the treatment of the parietal pleura, particularly in tearing it at the angles of the intercostal wound by injudicious use of the rib-spreader. The lungs may be handled freely, but pulling the great vessels and bronchi at the root of the lung should be reduced to a minimum. In heart suture, the Sauerbruch method of hemostasis lowers blood-pressure too much for it to be used except when other methods of hemostasis fail. Any mechanical stimulation of the heart during suture should be avoided as far as possible, as well as any unnecessary trauma in packing off the lungs to expose other organs. These are the stimuli causing the most serious reactions in these experiments. The experiments, Flint says, "throw no conclusive light on the relative value of the methods of maintaining anesthesia during surgical operations with an open pneumothorax." But they prove that it is more difficult to obtain normal pulse, respiration, and blood-pressure curves with the insufflation method. It is, however, far easier to keep the air-passages clear with insufflation than the other method, and there is no difficulty with the tongue or with vomiting. There is probably more heat loss as against no loss to mention by the mask method. Both methods have their advantages and points of superiority over the other and Flint disclaims any prejudice in favor of either.

Gastrocoloptosis, Its Pathologic Significance and Its Surgical Treatment. T. ROVSING, Copenhagen. *Journal American Medical Association*, August 3, 1912.

Rovsing says that the majority of surgeons in Europe, and almost the entire medical world, have no comprehension of the enormous pathologic significance of gastrocoloptosis and the therapeutic problems it presents. He rejects Glenard's and Stiller's theories of its causation, or at least does not accept them without reservations. The enormously greater frequency of the disease in women cannot be thus explained and he finds it accounted for in most cases by the misuse of corsets and lacings or to the changes induced in intra-abdominal pressure by pregnancy and childbirth. The rare cases of gastrocoloptosis occur in men with feeble bone and muscle structure and then usually after the use of tightly buckled belts. We must also, he says, abandon the idea of degenerative general asthenia as the cause of constipation, cardialgia, nervous symptoms, etc., as caused by such, and we would naturally seek to explain them as due to the ptosis itself. He divides gastrocoloptosis into two classes—virginal and maternal. The former is the one seen after puberty, when the previously healthy individual begins to suffer from constipation, nervous headaches, capricious appetite, and later from cardialgia in the form of severe pains occurring on the left side immediately after eating, often with vomiting of the food. Later, nervous symptoms develop in many cases, and irregular menstruation also occurs. He describes the mechanism of the etiology of the disorder at length, which explains the symptoms. The diagnosis is not difficult to an experienced person but presents many difficulties to an inexperienced one. The predominant symptoms naturally suggest gastric ulcer, the more so since the vomitus often shows streaks of blood. The differentiation from ulcer is as a rule easily made by the location of the pain on the left side, the quality of the food not being usually connected with it, but the quantity, on the other hand, more directly its cause. And the fact that the pains are more frequently abolished by confinement to bed but are always worse with the erect position is also important in diagnosis. The improvement by rest in bed also distinguishes it from colitis. The differentiation from hysteria is not difficult by physical examination and the *x*-ray and the lack of the real hysterical stigmata. There may be trouble in swallowing from stretching the esophagus and the changes thus induced, and the foldings or the creasing of the stomach may in time cause secondary ulcer. In a few cases an hourglass stomach may develop, as has been observed by Rovsing. Maternal gastrocoloptosis is often unattended by the cardialgia and vomiting and in it the constipation and consequent auto-intoxication are the dominant features. In a certain number of slight cases, especially with women who do not need to work, confinement to bed with good nutrition and fattening food may lead to an improvement and make life endurable. In cases that come to the surgeon the question is, whether bandage treatment or operation is necessary. In the maternal form the bandage will give good results in the majority of cases, but this is quite exceptional in virginal cases, where the abdominal walls are strong, and would call for a pressure that would be unendurable. Here even the best form of supporter is ineffective, and in these cases, and in cases of the maternal type where the transverse colon has fallen into the pelvis, the only help is in an operation which will raise the stomach and colon into their proper places. Rovsing has given up the indirect methods of Stengel, Beyea and Coffey and uses direct gastropexy instead. He describes his technic and gives statistics of his results. Since 1897 he has performed the operation 163 times and obtained information from other Scandinavian surgeons of 93 other cases performed by his method. All these have been carefully traced, showing 63.2 per cent. of complete cures, 19.8 per cent. of more or less improvement, and only 4.0 per cent. of deaths, not all of which could be properly attributed to the operation. He analyzes the causes of the imperfect results in some cases. Some of these have seemed due to certain imperfection of the methods in the earlier operations, some to imperfect diagnosis, and in some cases to the lacing, etc., which originally caused the disorder. The narrowing of the thorax may be so great as to render replacement of the dislocated liver and stomach impossible. In this fortunately small group of cases we have, according to his experience, the real indication for Arbuthnot Lane's "shortening" by ileosigmoidostomy, which he has employed in two otherwise desperate cases. The view maintained by some that the only operation for gastroptosis is gastroenterostomy is rejected by the author, who claims that it greatly aggravates the conditions. He deplores the too general neglect of surgery in these cases who wander from doctor to doctor and treatment to treatment without relief. If physicians could have their eyes opened to the real nature and diagnosis and treatment of these conditions a vast amount of suffering could be relieved.

Hyperacidity. G. R. LOCKWOOD, New York. *New York State Journal of Medicine*, August, 1912.

Lockwood suggests the following practical rules for diagnosis:

1. Do not make a diagnosis of hyperacidity until all organic lesions are excluded and even then be prepared, with a free and unbiased mind, to change the diagnosis to one that is more definite and distinctive, should other symptoms or physical signs arise.

2. Do not make the diagnosis of hyperacidity without examination of the fasting stomach by a tube. The presence of acid fluid, or of food remains or of any considerable amount of gastric mucus should exclude the diagnosis.

3. Do not make the diagnosis of hyperacidity simple because the patient is nervous and neurasthenic.

4. Do not make the diagnosis of hyperacidity should the previous clinical history suggest attacks that may point to appendicular or gall-bladder disease, or should the physical examination suggest that these lesions are probable.

5. Do not make the diagnosis of hyperacidity accompanied by epigastric pain. Especially should this diagnosis be avoided if the pains occur at a stated and regular time after eating.

6. Do not make the diagnosis of hyperacidity if hemorrhage is present either visible or occult, in vomited matters or in the stools. Examination for occult blood in the stools should never be neglected.

7. Do not make the diagnosis of hyperacidity in cases with repeated vomiting, especially if vomiting be of the abundant acid fluid indicative of hypersecretion.

8. Do not make the diagnosis of hyperacidity if the symptoms occur when the stomach should be empty.

9. Do not make the diagnosis of hyperacidity in the event of the test breakfast settling into two layers, the supernatant fluid layer being twice or more the depth of the underlying sedimentary layer. These are cases of alimentary hypersecretion and not of pure hyperacidity.

10. Do not make the diagnosis of hyperacidity in cases attended by loss of appetite or by nausea or by advancing anemia or by loss of weight, especially if the patient be of adult years with or without a previously good digestion.

11. Do not make the diagnosis of hyperacidity without mental reservation in those over 45 who complain of this disorder for the first time.

A Report of a Case of Bismuth Poisoning. Employment of the Bryant Bulldog Recovery. W. C. CRAMP, *New York State Journal of Medicine*, August, 1912.

The case reported was one of empyema of the pleura in an adult. After several weeks of treatment the cavity was reduced to 4 ounces and then 3½ ounces of 33⅓ per cent. bismuth subnitrate-vaseline paste were injected. Forty-eight hours later the patient was cyanotic, had severe abdominal pain and diarrhea. There was a purple line along the border of the tongue. The gums were bluish, spongy and also showed a blue line. Salivation was marked. He was immediately given a purge and the empyema cavity was washed out with olive oil. This had little effect. A Bryant "bull-dog" was therefore applied and kept in place. The patient's condition was now critical, the temperature was 103° and weakness was extreme. After several weeks, however, the condition cleared up.

The "bull-dog" used consists of a rubber drainage tube held in place with adhesive plaster, cotton and collodion. By means of a glass connecting tip a Pollitzer bag is attached and a continuous negative pressure is thus maintained.

Chronic Cystitis of the Trigone and the Vesical Neck. EDGAR GARCEAU, *Surgery, Gynecology and Obstetrics*, August, 1912.

Garceau lays stress upon the frequency and importance of trigonitis in women. Formerly patients suffering from this lesion were described as having "irritable bladders" and relegated to the class of neurasthenics. The disease is prone to be chronic, commences in most cases as a local hyperemia upon which is grafted some local infection. Gonorrhea is not the constant factor, traumatic catheterization, pelvic inflammatory conditions and tuberculosis are frequent causes. The diagnosis is made by means of the cystoscope. Treatment is not always curative. But a good deal can be secured by local treatment. Garceau begins by putting the patient at rest—washing out the bladder two or three times daily followed by an injection of 10 or 20 cubic centimeters of a 10 per cent. solution of protargol. This treatment does not cause much irritation and is preparatory to the severer measures as local application by means of the endoscope of two to five per cent. silver solutions once every four or five days.

The Status of Bacteria at the Operative Field in Gynecological Laparotomies in Relation to the Post-Operative Course. (*Über den Keimgehalt des Operationsfeldes, etc.*) ERNST HOLZBACH, *Zentralblatt für Gynäkologie*, August 17, 1912.

Holzbach employs the sterile cotton applicator used for taking throat cultures in preference to the three sponge test of Liepmann in order to exclude accidental contamination from the air. He finds that such bacteria as may enter into the operative field from the air may be entirely neglected as they never possess hemolytic properties and do not even induce changes in the synovial membranes of a rabbit's knee-joint when injected. These bacteria may be found as early as 15 minutes after exposure in 33 per cent. of all sponges, pads, etc., which are made ready for the operation. Of 54 cases in which cultures were taken from the operative field 34 proved to be sterile, although in 17 cases the vagina had to be opened. Of the 20 cases in which a positive culture was returned 5 were streptococcus, 15 were staphylococcus, diplococcus, coli and other bacteria. The mortality in the author's series was 23.5 per cent. of streptococcus, 3.4 per cent. of staphylococcus and 0 per cent. of all other bacteria. At the same time the absence of streptococcus at the time of the operation is no guarantee against a fatal issue. A positive culture of streptococcus should always make the prognosis an uncertain one.

Abdominal Tumors of Tuberculous Origin. A. C. WIENER, Chicago. *Medical Record*, July 27, 1912.

Wiener reports two cases. The first patient was a woman, 56, extremely emaciated, in whom the diagnosis of possible cancer of the gall-bladder was made. At operation the liver was studded with innumerable gray tumors, the largest the size of a pea. No other tumors in the abdomen were found. She reacted to tuberculin and under tuberculin therapy she has recovered sufficiently at the end of six months to be able to work.

The second was a patient presenting a larger mass in the right iliac fossa which seemed attached to the ilium. The history of long duration and fever seemed to invalidate the diagnosis of malignancy. *X*-ray showed that the tumor was not attached to the ilium. Under prolonged tuberculin treatment the tumor disappeared; corresponding to this the symptoms were almost entirely alleviated.

Among other conclusions, Wiener holds that tuberculosis must be regarded as a factor in the etiology of clinically malignant growths.

Blood Transfusion; Indications, Methods and Results. S. VINCENT, Boston. *Boston Medical and Surgical Journal*, August 22, 1912.

Vincent summarizes the present status of these phases of transfusion. As modifications, he mentions acute hemorrhages, shocks, gas poisoning and various forms of pathological hemorrhages. In the latter group may be mentioned the hemorrhages due to jaundice, hemophilia and the hemorrhages of the newly-born. In secondary anemias transfusion may be of value as a blood stimulant. In pernicious anemia, leukemia, acute infections and chronic toxemias, transfusion is without permanent benefit. The author summarizes the various methods of performing transfusion. He advocates especially the Elsberg canula and the paraffin coated glass tubes of Brewer.

The Surgical Treatment of Pulmonary Tuberculosis. (*Die Chirurgische Behandlung der Lungentuberkulose.*) JOSETH SARGO, *Wiener Klinische Wochenschrift*, August 22, 1912.

Sargo has treated 45 cases by causing an artificial pneumothorax through a pleural puncture. He is satisfied that this measure is of profound benefit, and is a justified procedure in all cases of unilateral severe pulmonary tuberculosis. Sargo has found, however, that if there is a progressive lesion in the other lung, the patients do badly and the lesion becomes worse. An artificial pneumothorax is therefore indicated only in a strictly unilateral tuberculosis, or when the lesion on the opposite side is very small and not very active.